THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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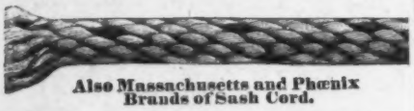
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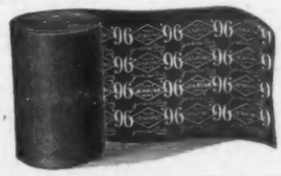

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Brass Prices High, So Use Bright "Swedoh" Stamping Steel. Easily Brass Plated and Save Money. See page 139

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Best Anti-Friction Metal for all Machinery Bearings.

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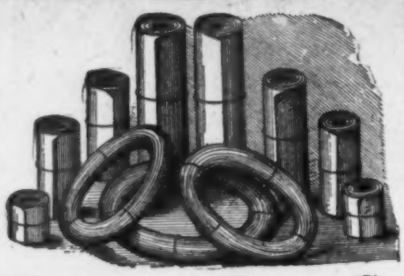

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WANTED FOR LIGHT METAL WORK WILL BE GLAD TO SEND PRICES
SPECIAL FACILITIES FOR MAKING MODELS
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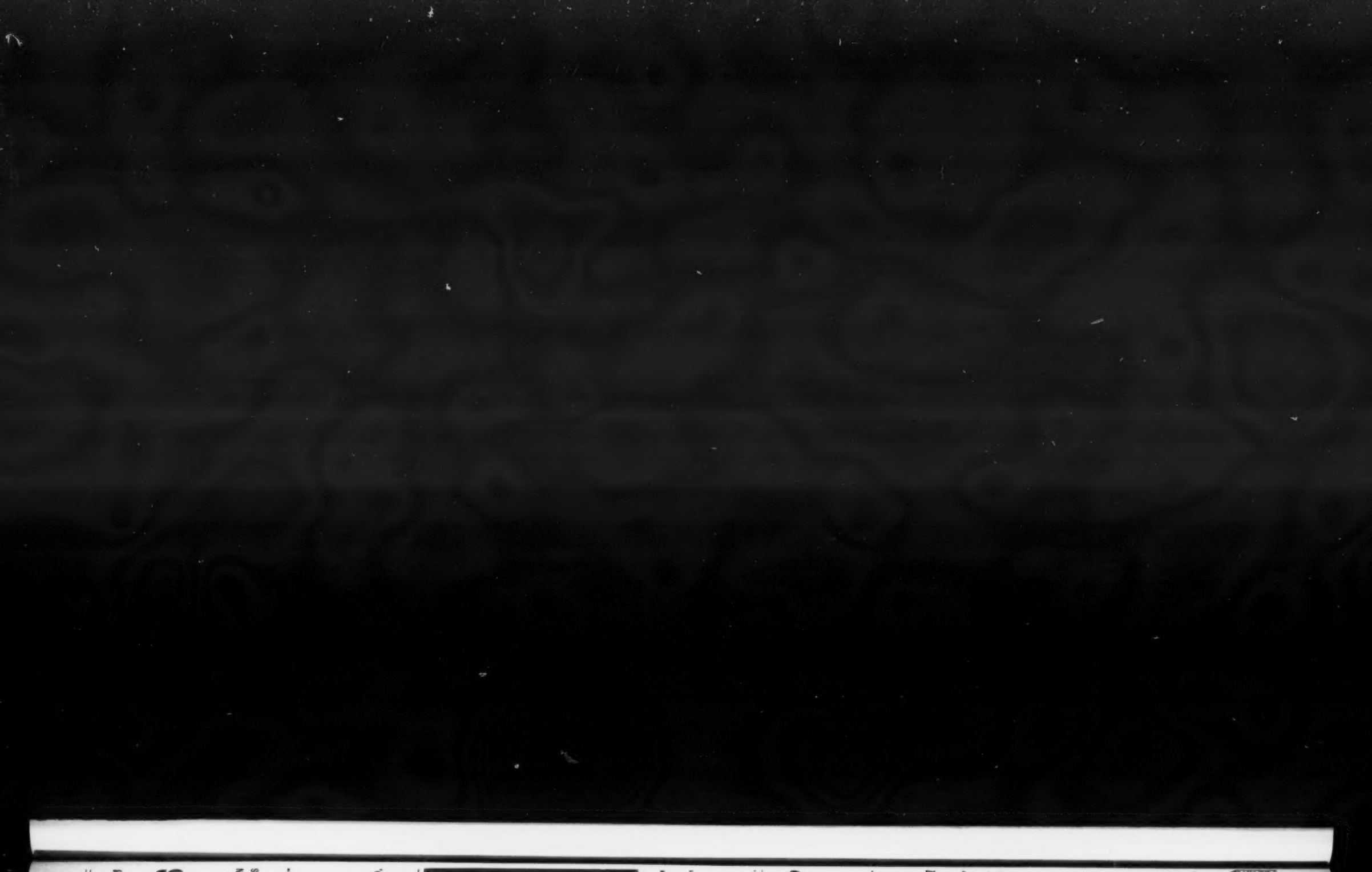


THE IRON AGE

THURSDAY, JANUARY 17, 1901.

The United States Steel Company's New Plant.

The United States Steel Company, West Everett, Mass., were organized under the laws of West Virginia in September, 1899, with a capital stock of $3,000,000, of which, however, there is only $1,682,475 now outstanding. The company own United States and foreign patents granted to Andres G. Lundin for improved processes of making steel castings. Under these patents by a variation of the proportion of the mixture there is obtained a very fine quality of soft steel with a tensile strength as high as 90,000 pounds if required, and which will weld, machine and produce the same practical results as a drop forging. The steel is peculiarly homogenous, of the working surfaces. The success attained led the company last year to see the necessity of greatly increasing their capacity, which has resulted in the building and equipment of a model steel casting plant.

After a most thorough study of the whole question, having especially in mind the necessity for handling coal and suplies, a large tract of land, admirably situated between the Boston & Maine Railroad and the Malden River, was chosen as the best available site for the works and acquired by the company. The railroad has put in a switch and sidings from the main track, which now run right through and around the works. In addition to this they have built a large and substantial pier 200 feet long on the Malden River and

Photo No. 1.—*Open Hearth Furnaces.*

UNITED STATES STEEL COMPANY'S NEW PLANT.

while the results can be obtained with unvarying accuracy.

It is also feasible to produce in a hard steel almost every sort of tool which is made ordinarily from tool steel, the method being to pour the metal into a mold the shape of the tool desired. No further work upon the tool is necessary other than to temper and sharpen it. In addition to this a steel can be produced which is self tempering, and which requires no after manipulation.

From the above it will be seen that the company were formed chiefly to produce steel castings of exceptionally high grade and possessing many qualities heretofore only attainable by expensive methods of forging and rolling. Again, their product, known to the trade as Jupiter steel, was of such commposition that even machine tools of the most intricate form, and requiring great hardness, as well as toughness, could be cast and require no extra work on them afterward, excepting the mere grinding

connected the same by tracks with all parts of the works.

The Malden River is at the present time being dredged by the United States Government to a depth of 16 feet, so that by next spring vessels drawing that depth will be able to lay at the wharf during all stages of the tide. By this means the company are no longer at the mercy of one railroad, but will always be able to receive their iron, coal, sand, &c., by water at low rates of freight.

The first plant erected and operated by the company was a crucible plant, but owing to the increase of business it was found necessary in the new works to put in open hearth furnaces as well, so as to be able to make large castings up to 15 or 20 tons of their special high grade metal.

The plant as now constructed is shown by the accompanying plan, upon which arrows indicate the point

of view of the several engravings. It consists of one steel building of the heaviest construction, 200 feet long by 118 feet wide, covering an area of 24,450 square feet. Through the center of this building there is a craneway 40 feet high, equipped with two electric cranes. The ladle crane is of the double hoist type, having the hoisting falls, which are two in number, extending down one on either side of the girders. The capacity of the main hoist is 30 tons. Between the girders, running on their lower flanges, is an electric trolley of 10 tons capacity. Either trolley can run the entire length of the bridge without interfering with the other. The span of the crane is 58 feet. It is supplied with five series wound reversing motors, wound for a direct current of 220 volts. Each hoist is equipped with magnetic and mechanical brakes. The other crane is provided with a main hoist of 10 tons and an auxiliary hoist of 3 tons capacity. The crane is provided with four series wound reversing motors, wound for a direct current of 220 volts.

In a wing attached to this main building are located at present two 15-ton open hearth furnaces, with all preparations made for two additional furnaces to be erected just as soon as the increased business shall warant them. This main building contains also all the equipment of a first-class foundry, in the way of drying ovens (of which there are three), core ovens, sand grinding machines, planers, drills and other machine tools. The several half-tones show the main features of this equipment.

Next to the main building is the gas producer house, 65 x 30 feet, in which are four 12-foot Talbot water sealed gas producers, with all their connections to the steel furnaces.

The next building is the crucible steel foundry, 100 x 75 feet, in which are situated the two crucible furnaces and all the necessary appliances and equipment for a complete steel foundry devoted exclusively to bench molding.

The power house, a brick and iron building 65 x 24 feet, contains the steam boilers and the large electric generating plant, which furnishes power to all the machinery throughout the works, as well as the electric lighting. This building also contains the air compressor which actuates the stock and coal elevators and also the sand blast machines for cleaning castings. Here we find also a large pumping engine, which furnishes all the water required throughout the works, and is also arranged for fire purposes in case of need. There is also a blacksmith building and machine shop, 40 x 30 feet, to be equipped as soon as possible with such machinery as may be found necessary to keep up all ordinary repairs.

Every part of the works has been laid out with a view to lessen the cost of handling material to the greatest extent, and there is no reason why castings should not be produced here as cheaply as anywhere in the Eastern States. However, while having all this in view, it is the quality of their castings which will make the success of the United States Steel Company rather than low prices, and, based on this fact of superior quality, we do not hesitate to predict for them a very successful career.

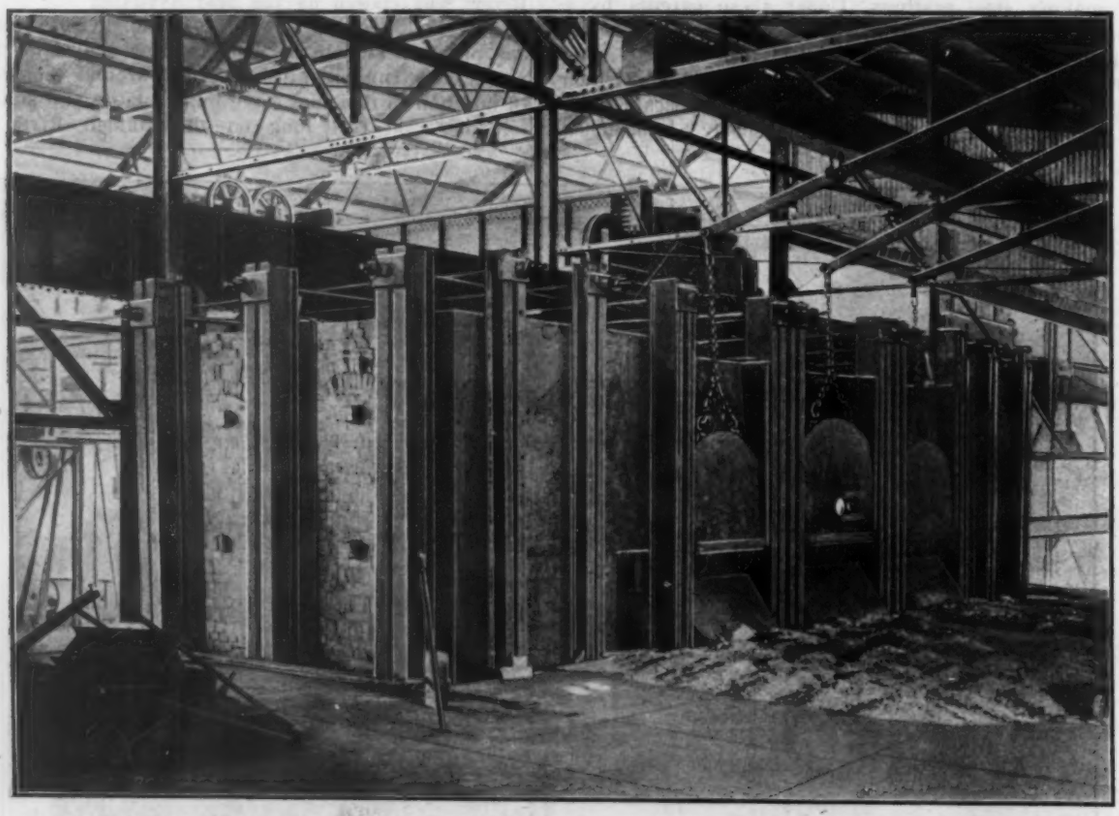


Photo No 2.—Charging Floor.

UNITED STATES STEEL COMPANY'S NEW PLANT.

The designing of the plant and the supervision of all the details of its construction was the work of the E. G. Spilsbury Engineering Company, 45 Broadway, New York. The officers of the company are H. B. Whall, president; Emery M. Low, vice-president; Chas. S. Miller, treasurer; H. R. Bradstreet, secretary.

The product of the company has been most flatteringly received by some of the most prominent manufacturers in the East, who have steadily followed their trial orders with regular business. The fact that the steel has such wide application and is so well adapted for use in many industries has resulted in its quick introduction.

An Anthracite Blast Furnace Record.—An interesting record has been made by the furnace of the Andover Iron Company at Phillipsburg, N. J., of which S. B. Patterson is superintendent. The furnace was lit December 15, 1895, and the blast was taken off December 15, 1900, making a run of exactly five years. From the hearth to the mantle the furnace is in perfect shape, good

enough for another run of five years or more. The lining is generally good above the mantle, only one thin place developing over a very small area about 15 feet above it.

made 197,162 tons of iron, the fuel used being chiefly anthracite, with some coke; the ore was chiefly a dense magnetite mined by the company, and the flux, a mag-

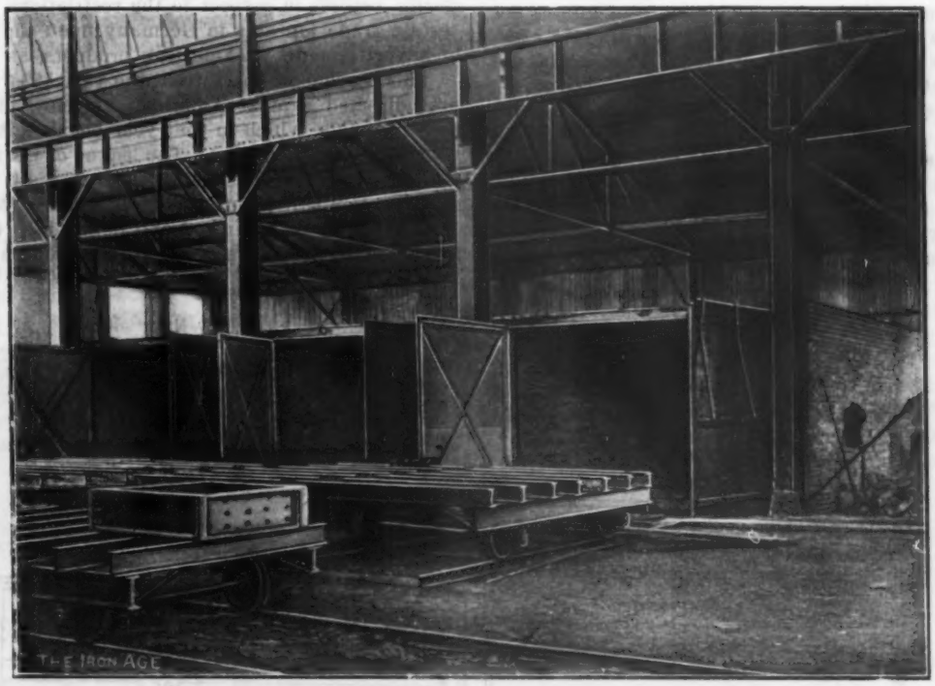


Photo No 3 — Ovens

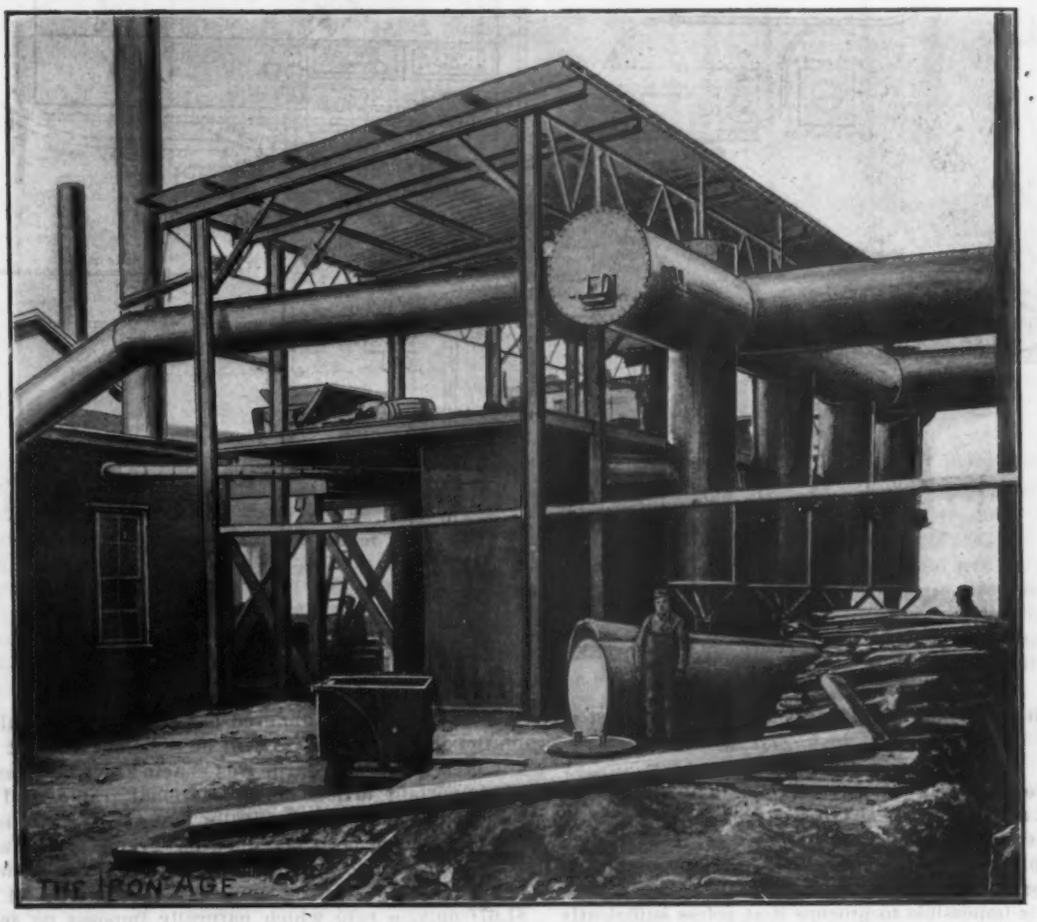


Photo No 4.—Gas Producers

UNITED STATES STEEL COMPANY'S NEW PLANT.

This weakness necessitated, however, blowing out the furnace. Of the 52 bronze bosh plates put in, but one had to be renewed, and that one lasted until within a very few weeks of the close of the blast. The furnace

nesian limestone quarried by the company close to the furnace. The ore was very uniform in composition, running in iron 57 per cent.; silica, 10 to 12 per cent.; phosphorus, 0.30, and sulphur a trace. The limestone ran

from 6 to 8 per cent. in silica. The blast was commenced with three four-pass fire brick stoves, 18 x 65 feet, in poor order. The second and third years they gave very poor service, and one or another was off for repairs a considerable part of the time. This state of affairs got so bad that in the summer of 1900 a stove, slightly used, 16 x 81, was purchased and erected. This additional stove made it possible to repair the three old stoves leisurely and carefully. The production of iron was also restricted by lack of capacity in the hoist, which was an old style, slow moving, automatic lift. The blowing capacity was ample. The air was driven into the furnace through seven 5-inch tuyeres. The iron made was chiefly foundry and mill irons, with a small amount of basic open hearth iron. The Andover furnace is 75 fet high, with 16-foot bosh, 9½-foot hearth and 12-foot stock line.

The No. 4 works of the Cherokee Lanyon Spelter Company, at Nevada, Mo., have been closed down. It appears that where formerly a number of the railroads used lump coal they now burn run of mine coal. This takes a considerable quantity of slack from the market, so that it is impossible to procure it at prices sufficiently low to compete with the smelters in the Kansas natural gas field.

The business of the Q & C Company and the Railroad Supply Company is now operated as one company under the name of the Railroad Supply Company, with D. S. Wegg as chairman of the board and C. F. Quincy as president. The offices of the company are in the Bedford Building, Chicago.

American Advertisments in Germany.

In compliance with special instructions from the Department of State, Frank H. Mason, Consul-General at Berlin, reports in respect to the restrictions imposed by certain trade journals in Germany upon the publication of advertisements of American products, as follows:

This movement dates from the year 1896, and was at first directed against American bicycles, bicycle parts and materials, which in that year began to seriously invade the German market. The league of German bicycle manufacturers held several meetings, at which the growing competition of American wheels was earnestly discussed and an organized and determined effort made to secure from the Imperial Government a decree increasing by several hundred per cent. the nominal duty on imported bicycles. It will be remembered that when the present German tariff was enacted bicycles were not an important article of international traffic, and they were not therefore specifically named in the schedule, but have since been classified as "vehicles" at a rate which makes the duty on an American wheel (weighing from 20 to 30 pounds) from 5 to 7 marks ($1.19 to $1.67) only, a rate which naturally imposes no serious obstacle to importations.

Failing to secure any advance in the rate of duty, the Association of German Manufacturers adopted the plan of boycotting, so far as possible, advertisements of American wheels and bicycle parts in the trade publications of this country. There were at that time half a dozen or more papers devoted almost wholly to the bicycle trade, and these were given to understand that they must choose between the patronage of the Ger-

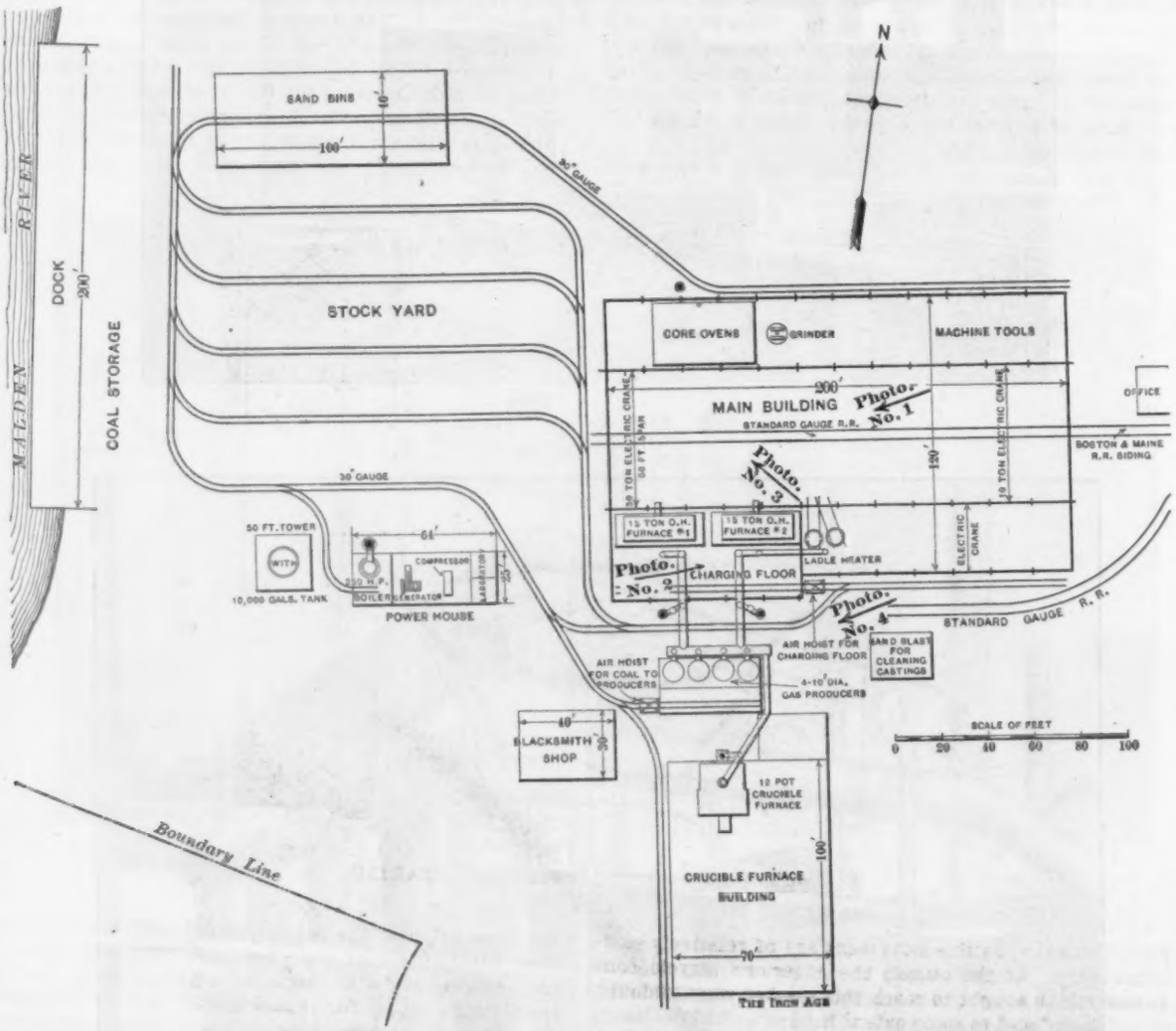


Fig. 5.—Plan.

UNITED STATES STEEL COMPANY'S NEW PLANT.

n..n bicycle makers and their foreign competitors, especially those of American nationality.

Under this pressure, most if not all the German bicycle publications refused to accept American advertisements, and this restriction is still maintained by the *Radwelt* (Berlin), the *Radmarkt* (Bielefeld), and the *Deutsche Radfahrerzeitung* (published at Essen), none of which, so far as can be ascertained, now accept advertisements of American bicycles or materials.

Several leading German bicycle makers are also manufacturers of sewing machines, and an effort was made to likewise exclude advertisements of American sewing machines from German newspapers, including even the daily press. This movement, however, failed—at least so far as the daily newspapers were concerned. They refused to be bound by any such narrow policy and freely accept advertisements of American products on the same terms as those of native origin. Some of the trade publications which are dependent upon the patronage of the home trade have been compelled to exclude advertisements of American machines, though to what extent this form of boycott has been developed it proves difficult to ascertain.

It will be understood that publications which have been dominated by this movement are of relatively small importance. At the outset, the American bicycle companies which sought to reach this market were undoubtedly delayed and to some extent injured by the exclusion of their advertisements from the trade papers; but they expended their money in sumptuous circulars, catalogues, posters, and other special forms of advertising, which, as they now think, were more effective and attained the desired result.

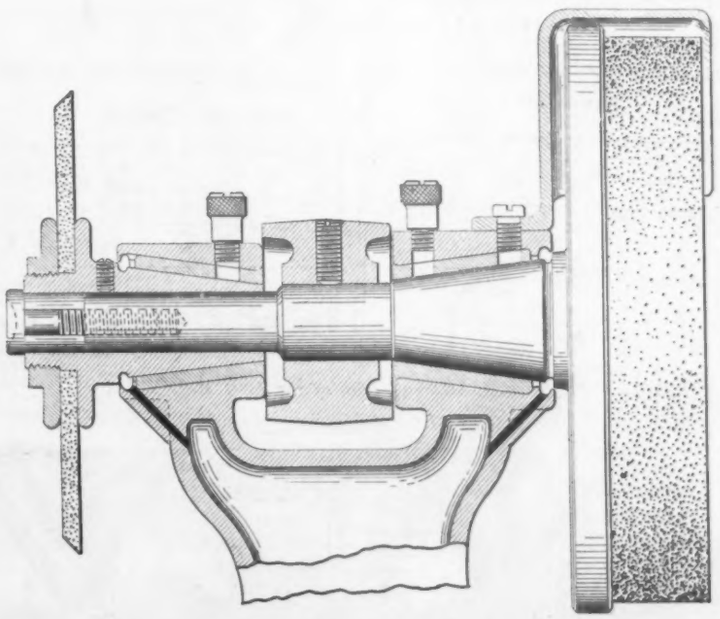
The manager of a leading American bicycle company who have their wholesale depot at Hamburg, and have built up since 1895 a large and permanent trade writes, in reply to a special inquiry on this subject:

"We have paid no attention to the cycle papers during the past four years. Five years ago we advertised in the *Radwelt* and the *Radfahrerbundes Zeitung*, and at the end of 1896 they refused to take further advertisements from us. We therefore spend the same money on illustrated papers published in Germany, and, we think, to much better advantage. In fact, if all those papers should now offer to take our advertisements, I do not think we would accept their offers. A few years ago this undoubtedly hurt us; but under present conditions of the bicycle business the trade paper does not have the same influence that it formerly had."

This would appear to describe the present situation correctly in so far as the bicycle trade is concerned.

The Heald Drill Grinder Bearing.

The bearing adopted for the American twist drill grinder built by L. S. Heald & Son of Barre, Mass., is here illustrated. The machine was formerly constructed with a long, straight taper bearing, having the pulley at the small end, and to adjust for wear the arbor was drawn into the bearing by a screw outside the pulley. In the new construction, as will be seen in the engraving, the arbor is turned with a sufficiently steep taper at the end which carries the principal wheel, this taper journal running in a babbitted bearing. The arbor is then turned straight for the fit of the driving pulley and then smaller for the other end, on which is a snugly fitted sleeve with the outside made of a similar taper to the one forming the other journal of the arbor, and this caries on its outer end a thin and light emery wheel when desired. The sleeve is adjusted by the central screw tapped into the end of the arbor and is secured by a small headless screw at the side. This adjustment, it will be seen, provides for the fit of both journals and for the end thrust. The bearings are provided at the outer ends with oil channels and at the inner ends with suitable self closing and dust proof oil covers, so that the lubrication of the entire journal service is assured. This arrangment of two bearings adjustable toward each other make a far superior construction to the old style single taper, for it was found that in adjusting this old style machine the ends would wear much faster than the center of the bearing, and, therefore, when taking up the wear the arbor was made too tight in the center to run well before all the looseness was taken up at the ends. The present construction provides take up for all wear, and, with the belt pulley in the center between the bearings, makes an easy running and durable machine. The mounting of the emery wheel does not appear in the cut. The wheel consists of a ring of emery 8½ inches in diameter, with a 6-inch hole, and is threaded into the wheel chuck by the use of a ring of soft metal. Therefore no central web with nut and washer is required, which are often in the way when the wheel is partly worn back. A safety chuck is thus provided and the entire wheel is used up in service. The thin emery wheel on the other end is furnishd when desired, and is found convenient for thinning the points of drills when they are worn back and the center becomes thicker.



THE HEALD DRILL GRINDER BEARING.

The American Tin Plate Company are considering the advisability of erecting a natural gas pumping plant near Anderson, Ind.

The McKenna Process of Renewing Old Steel Rails.

When steel rails were first introduced the managers of railroad companies were confronted by the problem of what disposition would be made of the rails when so worn by service as to be unfit for further use in the tracks. It was known that steel rails could not be put through the same rerolling process as old iron rails, because steel, unlike iron, will not weld in rolling. The life of the original steel rails was, however, so much greater than that of the iron rails which they displaced that the problem was left for solution in the future. In the course of time, through the cheapening process of steel manufacture, the use of steel rails became universal and quantities of old rails accumulated. Uses for them were gradually found as they began to come on the market. Ingenious rolling mill men invented methods by which the rails could be flattened into narrow plates or could be slit, separating the heads, webs and flanges, and thus permitting the several portions to be heated and rolled into merchant shapes. It was found also that a demand arose for partly worn rails for relaying in places in which they were as satisfactory as much dearer new rails. A careful selection was also necessary, as a large percentage of the used rails would be found so battered in the heads that they were of little value either for rerolling or for use in laying track even for sidings or yard purposes. But with the introduction of the basic open hearth steel furnace another great channel of consumption for these rails was provided. They were cut up and used for remelting in connection with other scrap and pig iron.

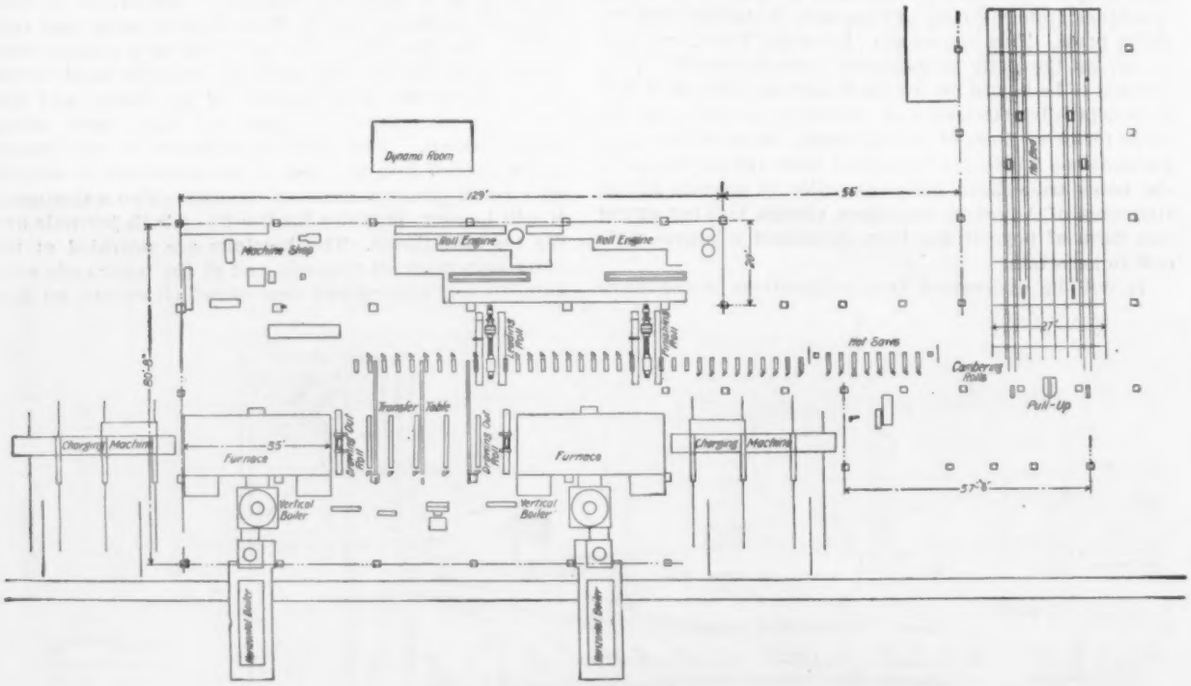


Fig. 1.—Ground Plan of the Joliet Mill.

Fig. 2.—Rail Grinding Machine

THE McKENNA PROCESS OF RENEWING OLD STEEL RAILS.

Within the past five years another method of utilizing worn out steel rails has developed, which has now progressed to such a point that it promises to be a much better and more satisfactory method to railroad companies of handling most of such rails. This method is owned and operated by the McKenna Steel Working Company, whose principal works are at Joliet, Ill. The company receive old steel rails which have been so badly worn that they have to be taken from the tracks of the railroad companies and subject them to a reducing proc-

ess of rerolling by which the rails are converted into practically new rails of perfect section and of but slightly decreased weight per yard.

This process was conceived in 1891, by E. W. McKenna, the president of the company named, who was at that time assistant general superintendent of the Chicago, Milwaukee & St. Paul Railroad Company. He was not satisfied with the results which that road obtained in endeavoring to repair battered rail ends by sawing them off. He made investigations and undertook experiments in the effort to contrive some method of utilizing the worn out rail, believing that better financial results could be attained than by throwing the rails on the market as scrap material. Mr. McKenna had been connected all his adult life with the management of railroads, usually serving in some capacity which caused him to be deeply interested in the maintenance of way. He became general superintendent of the Great Northern Railway Company, but was so interested in the question of utilizing old rails that in 1895 he resigned that position to give his entire attention to this matter.

The first actual work in this direction was done in 1895 at the old North Chicago plant of the Illinois Steel Company. The rolling mill, which was idle at that time, was leased for a short period and arranged for this purpose. Under Mr. McKenna's direction 3500 tons of rails were rolled for experimental use on the Chicago, Milwaukee & St. Paul, the Atchison, Topeka & Santa Fé, the Chicago, Burlington & Quincy and the Michigan Central railroads. Shipments of worn out rails were received from all these companies and the treated rails were returned to them. These rails were relaid at points in the several railroads where they would be subjected to the severest tests in order to determine the efficiency of the process in producing a perfect section and proper wearing qualities. The results were so gratifying that arrangements were made in 1897 for the erection of a rolling mill plant for the special purpose of renewing old steel rails at Joliet, Ill. In 1898 a plant for similar purposes was erected at Kansas City, Mo. At the present time over 1000 miles of railroad track relaid with McKenna treated rails are in use, the two mills having renewed 96,500 tons. The reports on these rails not only demonstrate wear resisting qualities equal to new rails but actually superior to them.

In the process of treating the rails they are only slightly reduced in section in the webs and flanges, while the shape of the head is changed so as to make a perfect but slightly smaller head than that of the original section. In this reduction the metal is still further worked than in the original rail, which makes the steel denser and therefore improves its quality, according to all theories of working metal. The rails are further finished at a much lower heat, fully 300 degrees lower, than has been customary in the manufacture of new steel rails and their quality is also improved from this cause. It is believed that the excellent service given by the McKenna treated rails has attracted the attention of railroad managers to the benefits resulting from finishing rails at a low heat and is causing the change in rail rolling practice now taking place. Remarkable results have been secured by the McKenna process in converting soft steel rails into rails which have proved very serviceable. While it cannot change the chemical composition of the rail it very plainly changes the physical structure.

Great difficulties were encountered by Mr. McKenna in endeavoring to get his process on a thoroughly commercial basis. It was necessary to devise a special heating furnace for heating rails 30 feet long and heating them uniformly and to the proper temperature. It was found that special arrangements would have to be made for taking the fins or slivers from the heads of the battered rails before rerolling, as they would not weld

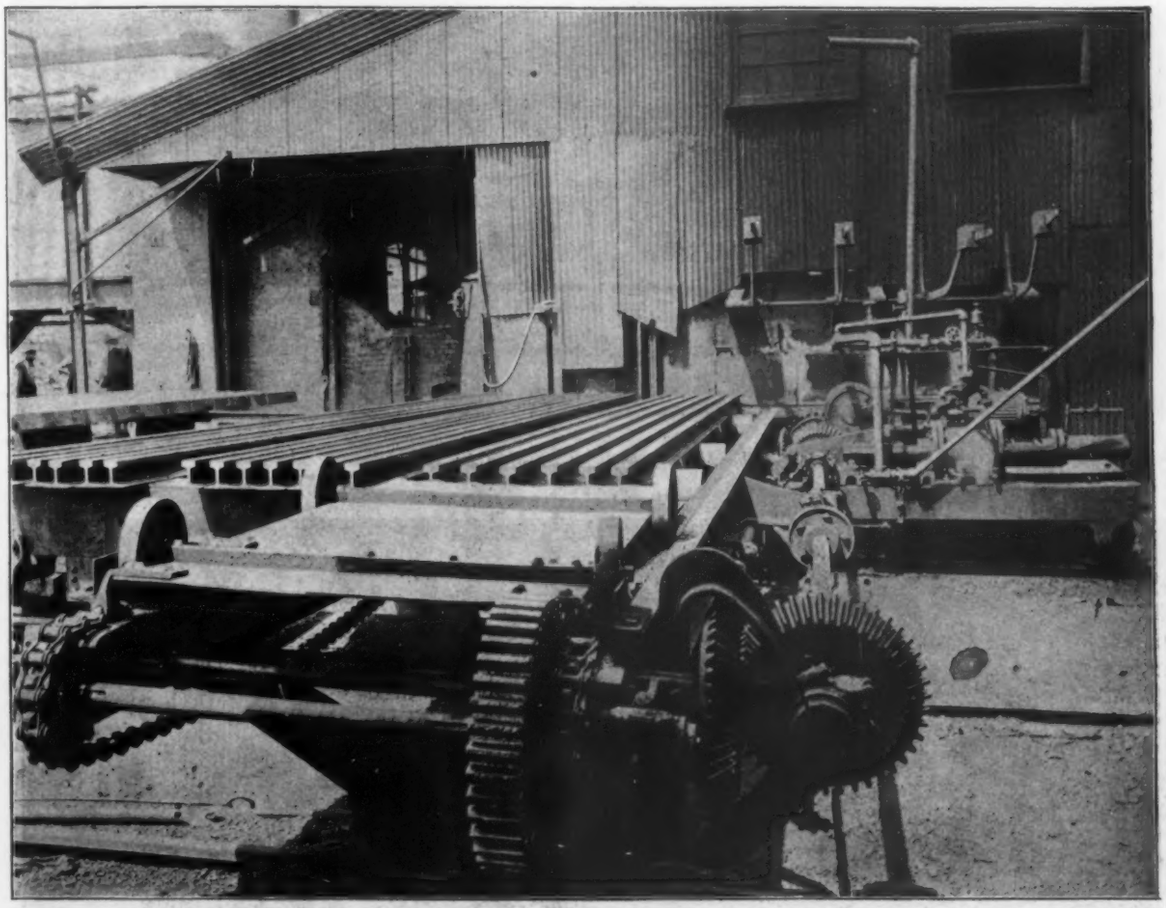


Fig. 3.—Heating Furnace Charging Machine.

THE McKENNA PROCESS OF RENEWING OLD STEEL RAILS.

with the rail and would prevent perfect sections from being turned out. Other difficulties were encountered in various stages of the process, all of which had to be studied and satisfactory methods devised of overcoming them. In this work Mr. McKenna had the very intelligent and efficient assistance of David H. Lentz and H. C. Shaw. Patents were issued to them, comprising 17 in all, covering the entire process and machinery. The company also bought the exclusive right

slivers, being cold rolled by the constant hammering of car wheels, proved to be so hard that the bit of a planer after a few minutes' work heated to such a degree that it fused with the metal, although made of Mushet steel. The grinding machines as constructed have been found to work perfectly. These machines are two in number and placed side by side. Each machine has two cup wheels or emery rings fastened on chucks. These emery wheels are placed between a series of six rolls

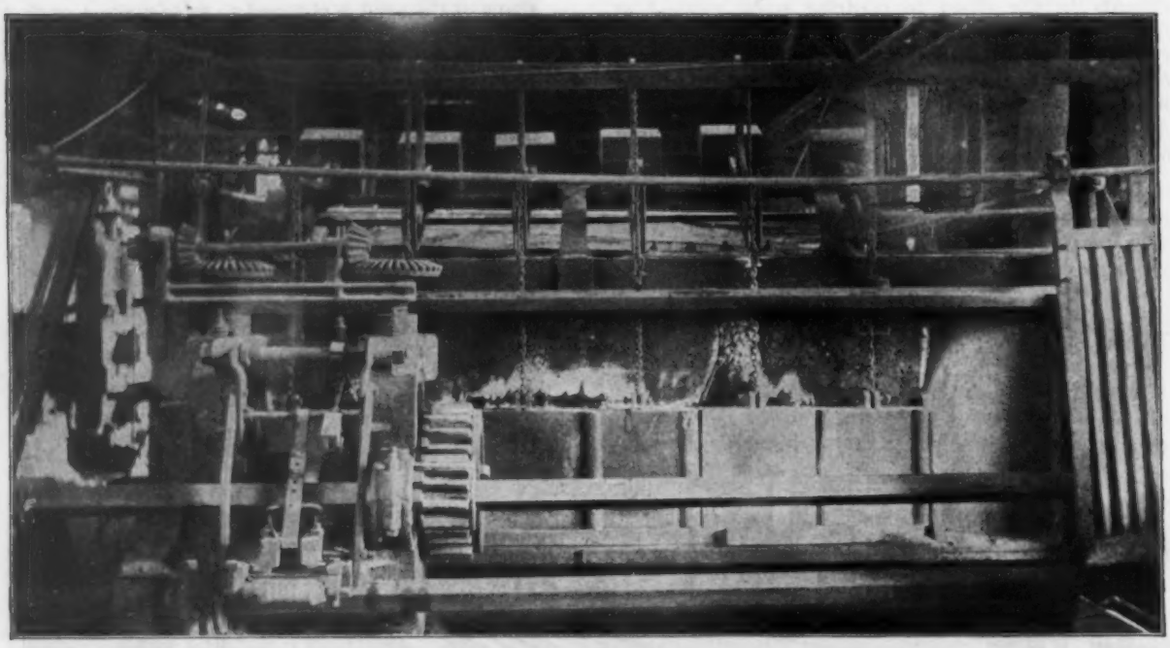


Fig. 4.—Heating Furnace Drawing Device.

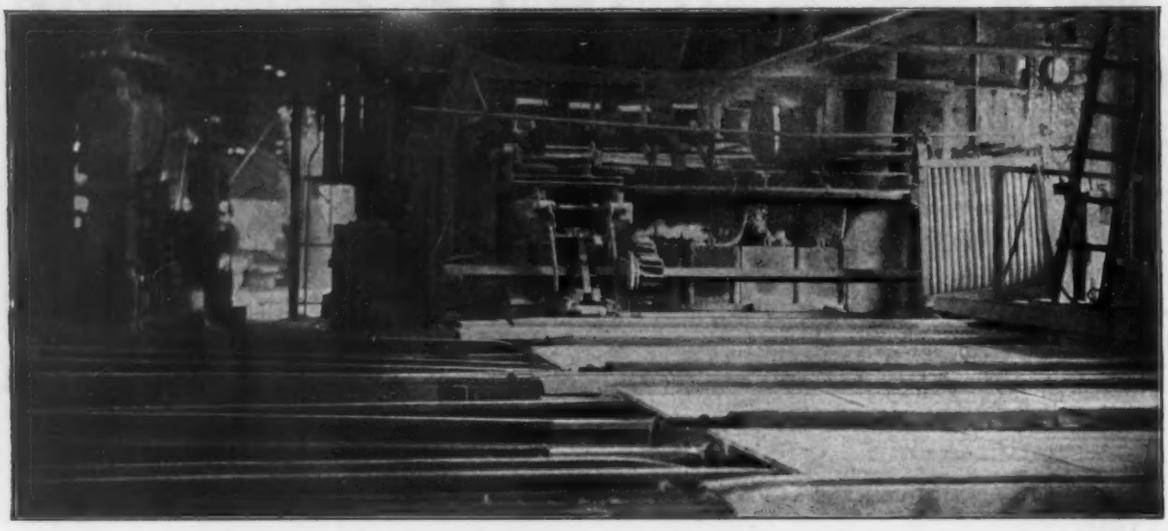


Fig 5.—Rail Transfer Table

THE McKENNA PROCESS OF RENEWING OLD STEEL RAILS.

to use the B. C. Lauth furnace, as modified for heating full length rails.

The ground plan of the Joliet works is shown herewith in Fig. 1. This plan will enable a description of the process to be more intelligently followed. The plan does not cover all the works, the straightening and finishing department being omitted, as it is practically the same as that found in connection with ordinary rail mills. The first process through which the rails are passed is through the grinding machines illustrated in Fig. 2. These grinding machines were devised by Mr. Lentz after unsatisfactory attempts had been made, first by workmen with cold chisels, second by pneumatic chippers and third by a planing machine. The fins or

arranged in pairs which hold the rail in position up to the wheels. An independent engine supplies the power for running the emery wheels and actuating the feed mechanism. The operation is so rapid that only 1½ minutes are required to completely grind the head of a rail free from fins and prepare it for the heating furnace.

It will be observed from the ground plan that the mill has two charging machines and two heating furnaces, which are arranged on opposite sides of a transfer table leading to the rolls. An illustration of one of these charging machines is given in Fig. 3. This machine was specially devised for the purpose and is the result of a series of experiments. It is so arranged that it will take seven rails at one time, and push them into

the heating furnace. Tables are placed at the side of the charging machine on which additional rails are placed in groups of seven, each group being transferred to the charging machine by power. The machine and the transfer mechanism are operated by steam and controlled by levers, the operator being stationed on a platform at the side of the machine.

The heating furnaces have interior dimensions of 34 feet in length and 12 feet in width. They are sufficiently wide to take a charge of 21 rails lying side by side, are direct fired, and have two firing chambers, one at each end. They are of the reverberatory type and are so constructed that the heat impinges directly from the roof on the heads of the rails, thus heating them to a greater degree than the webs and flanges. These heating furnaces are found to do the work admirably, heating the rails very uniformly, while the temperature is under perfect control. The waste heat from each furnace is utilized in heating two boilers, one vertical and one horizontal, which furnish ample steam for the plant.

Robert W. Hunt & Co., Chicago, made observations by a lunette pyrometer at these works in December. The temperature of the rails as they were drawn from the heating furnace was found to average a little under 1800 degrees F.; on the transfer table, just before passing to the leading or roughing rolls, they averaged about 1700 degrees; when emerging from the finishing rolls, they averaged about 1480 degrees; on the hot bed, after passing through the straightening machine and saws, the average was about 1200 degrees. In ordinary rail rolling practice the temperature of the rails is usually about 1760 degrees before going through the last pass in the finishing rolls. These observations show that the temperature at which rails are worked by this process is quite considerably below the temperature in usual rail rolling practice.

Fig. 4 shows the arrangement at the drawing out end of one of the heating furnaces. The rail is handled by means of a hook inserted in one of the bolt holes, the hook being fastened to a rope which winds on a drum, thus enabling the rail to be drawn out by power. As the rail emerges from the furnace it passes through what are called the drawing out rolls. These rolls are 10 inches in diameter. They accomplish a double purpose. They not only draw the rails out of the furnace but also reduce them to a uniform hight, as all the rails of the same section must pass to the other rolls at one size.

The rails being drawn on a transfer table, they are then delivered broadside to the feed tables of the leading rolls. These rolls are two-high and 25 inches in diameter, operated by a 300 horse-power engine. In this set of rolls the entire reduction is accomplished. Power tables immediately take the rail to the finishing rolls, which are also two-high and 25 inches in diameter and are operated by a 300 horse-power engine. An illustration of this arrangement is shown in Fig. 5. This one continuous pass from the furnace through the three sets of rolls completes the rolling process, which takes an average of only 29 seconds from the time the rail is drawn from the furnace until it reaches the hot saws. It may be remarked here that a special set of rolls is required for each lot of rails. The templets of the rails vary according to the manner in which the head of the rail is worn. It is sometimes necessary to transfer considerable metal from one side of the head to the other to secure a perfect section. This is accomplished with no difficulty, although originally pronounced an impossibility by experts in rail rolling. It occasionally happens that the web of the rail must be slightly elongated to

Fig. 7.—The Straightening Department.

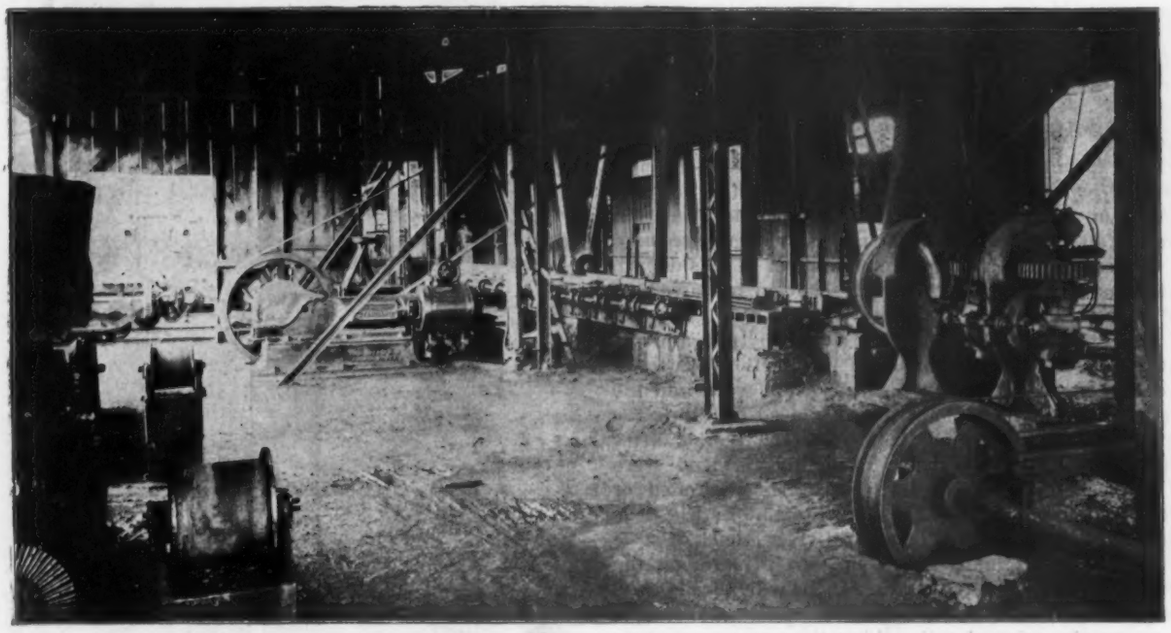


Fig. 6.—The Cambering Rolls

THE McKENNA PROCESS OF RENEWING OLD STEEL RAILS.

bring the rail to a proper hight. Such an elongation has been made to the extent of ⅛ inch. Experience and good judgment are required in determining precisely what to do with each lot of rails. The skill of the roll turner has much to do with the success of the process.

From the finishing rolls the rails are taken by power tables to the hot saws, where they are sawed to the proper length, and next to the cambering rolls, as illustrated in Fig. 6. It has been found that the rails must be held rigidly in position before the saws and for this purpose a pressure vise operated by hydraulic or steam power is placed in front of each saw to hold the rail.

From the cambering rolls the rails next go to the cooling bed and thence to the straightening department. An illustration of the straightening department is given in Fig. 7. In this department five straightening presses

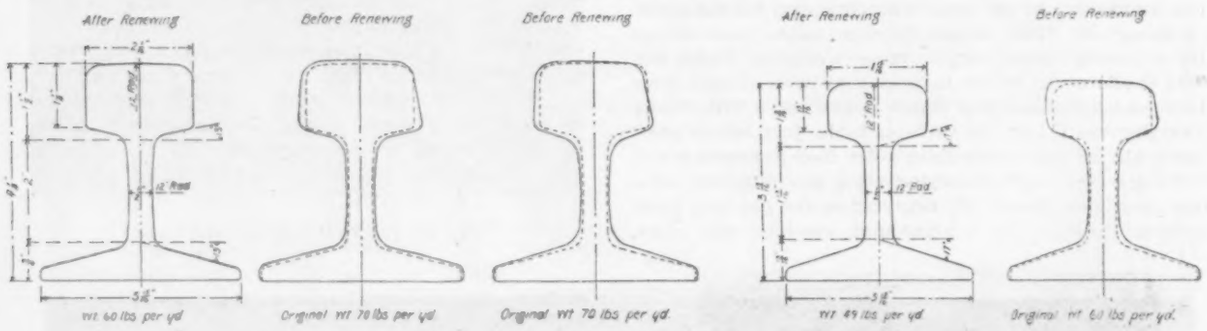


Fig. 8.—Sections of Worn and Renewed Rails.

are used. After being straightened the rails go to the drilling machines, where holes are drilled for the angle bars. Great care is taken in this stage of the finishing operation, in order to make the angle bars used for the original sections of rail fit the treated rail precisely. A cold saw is a portion of the equipment of this department, as ends of rails frequently have to be sawed off to bring the holes in the proper place.

In Fig. 8 are shown sections of worn rails and the same sections after treatment. These sections show the peculiar manner in which the rails were worn and the manner in which the metal was displaced in rolling the new section. The dotted lines show the section after renewing. These rails when originally received were of the usual 30-foot lengths. After being rerolled or renewed the rails were 32 feet in length. In Fig. 9 is shown an illustration of comparative sections of a 5-pound rail as originally rolled and after treatment, the dotted line showing the new rail. It will be observed from these sections that the renewed rail is of the same shape as the original rail, taking the same angle bar, while it is very slightly reduced in thickness of head.

In this process of treating rails, the life of a rail is simply measured by the number of times it is susceptible of repair. Instead of the eight or ten years now generally considered the life of a steel rail, it may be rendering service for 50 years before being thrown into the scrap heap. The leading railroad systems of the country now use rails of different sections on different parts of their systems. They use possibly 100-pound rails on some divisions, 90 on others, 80 on others, and so on down to perhaps 60. It will readily be seen that as these rails become so worn as to need replacing they can be rerolled to lighter sections and thus be rendered fit to use in other places. In the process of rerolling or renewing, the rail also becomes tougher and better able to resist wear. It has been shown by numerous tests that the treated rails are much more elastic than the new rails, as they will not take a set as easily as the new rail. It is a much more difficult matter to straighten them on this account. Their increased toughness and elasticity, however, make them better for track service.

The reduction from the original section of rail varies, being governed by the amount of metal lost through previous service and to some extent from peculiarities of section. In some instances the reduction has been as low as 6 per cent. and in rare cases as great as 10 per cent., the average approximately being 8 per cent. In most instances, with an average reduction of cross section of 8 per cent., the rails are produced of an increased length, usually of 31 or 32 feet. It is found by actual experience that railroad companies furnishing worn rails to be treated receive from the original shipment 93 per cent. of the weight in finished rails and 6 per cent. in crop ends, showing 1 per cent. furnace loss.

An illustration of the result of rolling by this method is given in the following report of a transaction: The lot comprised 5366 tons. The number of rails received was 16,007, measuring 479,073 lineal feet, and having an average weight per yard as received of 75.27 pounds. The number of rails shipped back to the railroad company was 16,007, having a total lineal measurement of

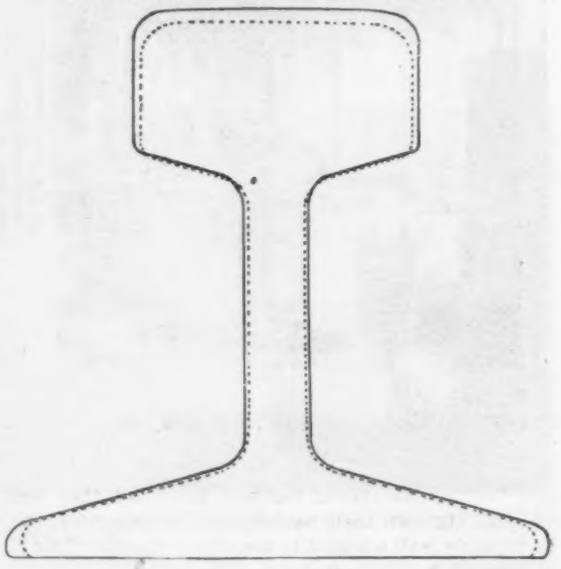


Fig. 9.—Comparative Section of Original and Renewed Rail.

THE McKENNA PROCESS OF RENEWING OLD STEEL RAILS

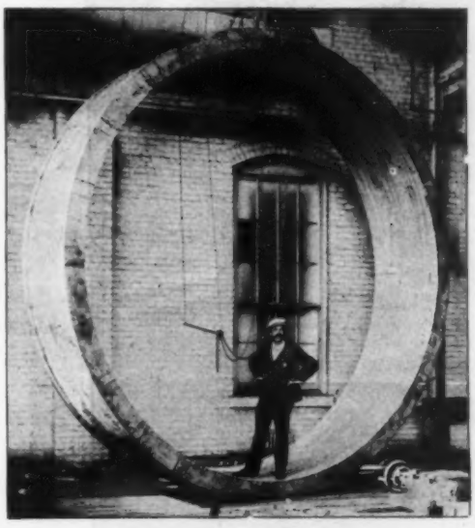
486,423 feet and an average weight per yard of 67.71 pounds. The net gain in length was 7350 feet and the reduction in weight was 7.56 pounds per yard.

Results so far accomplished by the company have been so satisfactory that they are enlarging their field of operations. The Joliet works have a capacity of treating 420 tons of rails daily, working double turn, and the Kansas City plant of 400 tons, double turn. A third plant is under contemplation at a site on tide water contiguous to New York, which will probably have a capacity of 500 tons or more. The geographical arrangement of these mills will then enable the company to economically handle the rails of different parts of the country. Their method has been to receive rails from a railroad company, making a charge of $5 to $6 per ton for rerolling. If this price be added to the scrap

value of the old rail, it will be seen that a railroad company receive a new rail at a very reasonable price. Inasmuch as the commercial results of this process are not governed by the price of new rails, it will be seen that their operations will not be checked by the price of new rails falling to low figures. The relations of new to scrap rails will always give a sufficient margin for their business.

Hard Wood Lagging and Its Applications.

One can hardly have helped noticing, in the last few years, the increasing number of concerns engaged in the buying and selling of second-hand material of all sorts. Particularly is this observable in the machinery line, where anything from a monkey wrench to a locomotive can now be had. This field of buying and selling second-hand equipment seems to be practically unlimited, and is due to the ever increasing and changing demands of the many thousands of manufacturers in the country, who, owing to excessive competition, which has created the necessity of producing articles at the minimum cost, have had to centralize their power plant and equipment and adopt newer methods of manufacture. The result of these rearrangements is the throwing out of use of a never ending lot of machines which may have been well thought of in their day, having been abandoned because the special business for which they were used has outgrown their usefulness. Nevertheless, they may be quite well adapted to the requirements of manufacturers of a different class. What was at one time considered more as dead stock now readily finds a market, and here the machinery broker steps in and is a sort of a clearing house for all discarded equipment.



HARD WOOD LAGGING FOR THE RIM OF A WHEEL.

Perhaps the principal products falling to the broker's hands are boilers and engines, the engine being the greater element of value. Should any one desire a stationary engine, which for any one of many reasons may have found itself in the hands of a machinery broker, this may be had with but little trouble and at a very attractive price as compared to a new engine. Immediate delivery is also secured, and this in a great many instances is an important factor and influences the purchase. As every engine is supplied with some sort of a driving pulley or balance wheel, neither of which may be suited to the purchaser's requirements, a proper driving pulley must be provided, and the usual course is to proceed to the nearest machine shop and contract for an iron wheel, have it turned for a belt transmission or rope drive, and exchange the old wheel toward the purchase price of the new wheel.

A much quicker and simpler method of meeting the purchaser's needs in this line is secured in the application of the hard wood laggings manufactured by the Dodge Mfg. Company of Mishawaka, Ind.

Take an engine supplied with a balance wheel. The Dells Paper & Pulp Company, Eau Claire, Wis., in order to provide against any possible failure of their water supply, decided to install a steam plant. They secured a second-hand stationary engine having an 18-foot, 15-inch, square rim balance wheel, weighing 50,000 pounds. As the balance wheel was not suitable for driving purposes, it was either necessary, in order to use the engine, to secure a new driving pulley or lag this old one up. In figuring the cost of a new driving pulley and of lagging this balance wheel, it was seen that a saving of about 50 per cent. in the cost of exchanging this balance wheel toward the purchase price of a new wheel would be made by using the hard wood lagging. This lagging is 44 inches face, being grooved for 18 1½-inch ropes, and is capable of transmitting 750 horsepower. The internal diameter is 18 feet, while its pitch diameter of ropes is 19 feet.

Next, take the case of an engine supplied with a band wheel. The Citizens' Traction Company of Oshkosh, Wis., desired to transmit greater power than the old iron band wheel would allow. The increase in power was accomplished by the application of the lagging, which widened the face of the driving wheel and with the attending increase in diameter secured, together with the superior tractive qualities of the wood surface over the iron, a material increase in the amount of power transmitted from the original driver was made possible. The internal diameter of this lagging was 16 feet; outside, 17 feet, with 37-inch face.

An interesting rearrangement of the power equipment of a plant was made at the works of the Thos. Forman Company Limited, of Petoskey, Mich. In this instance the hard wood lagging converted a belt transmission into a rope drive. In remodeling the plant it was found necessary to change the line shafting and place it at a right angle to the engine shaft, instead of parallel, as before. It was also necessary to drive a counterline shaft at each end of the mill in opposite directions. This was done by the application of lagging to the engine fly wheel, using four of the 12 1¼-inch ropes from the fly wheel with a quarter twist to drive the shaft at one end of the mill.

The accompanying illustration shows a hard wood lagging rim previous to shipment. The internal diameter of this rim was 14 feet, with 15 feet pitch diameter of ropes. It was grooved for 18 1½-inch ropes for P. & F. Corbin, New Britain, Conn., who desired to transmit power from one building to another building located on the opposite side of street. This was done by the application of the lagging upon the engine fly wheel and running the ropes through a tunnel under the street. This lagging displaced a belt transmission as well.

A New Tube Plant.—CHESTER, PA., January 15, 1901.—Your correspondent has learned that another tube plant is still in contemplation, which is to be erected by Captain McManus and others in this city. The work for the plans and specifications is going on, and in due time another pipe and tube mill will be erected in this vicinity. Engineers are at work on the plans, and the work will be started in a short time on the construction.

W. W.

It is reported that the Carbon Steel Company of Pittsburgh have leased the old West Shore shops at East Buffalo, N. Y., adjacent to the Pullman shops, where they will establish a carbon steel axle plant. President Robertson of the Carbon Steel Company, and Dr. W. Seward Webb are said to be interested in the venture.

On January 1 a new library was opened at Vandergrift, Pa., which contains about 2000 volumes, while in the reading room there are some 50 magazines and trade papers. The building is owned by the citizens of Vandergrift, who subscribed $25,000 for its erection, the ground and $10,000 having been given by the American Sheet Steel Company.

The Morgan Continuous Gas Producer.

The Morgan Construction Company of Worcester, Mass., have recently furnished a large installation of their continuous gas producers for the South Chicago works of the Illinois Steel Company. The producers will supply gas for the large open hearth furnace plant, and are the first of this type to be employed in the United States in connection with the open hearth furnace.

The special feature of this producer is the feeding device, by which the coal is continuously and uniformly distributed over the charging area of the fuel bed. The feeding device is the invention of C. W. Bildt of Stockholm, Sweden, and is covered by patents in most of the European countries, the United States patents being owned by the Morgan Construction Company.

A large number of producers fitted with the Bildt device have been in use for a number of years in this country and Europe, but generally for supplying gas to heating furnaces, where they have demonstrated their superiority over the ordinary hand fed producers.

To obtain the best results in any gas fired furnace it is essential that the gas supplied to it be uniform, both in quality and quantity. Owing to the irregular supply of gas from hand fed producers, natural gas and oil have been given very largely the preference in metallurgical works. The present prices which manufacturers are called upon to pay for these natural products have forced upon them to a larger extent than ever before the use of producer gas. The coal from the Pittsburgh district is especially well adapted for gas making, since it has a small proportion of ash which does not clinker readily. The coal from the Illinois fields, however, has an extremely fusible ash, which forms clinkers to such an extent that when used in gas producers of the ordinary kind the gas formation is extremely irregular, notwithstanding a great amount of hand poking.

The successful operation of two Morgan gas producers at the works of the Grand Crossing Tack Company, Chicago, using Illinois coal, led the Illinois Steel Company to make an investigation of their merits. The result of this investigation was the placing of an order for 22 producers for their South Chicago plant and later two more for their Joliet plant.

The results of a test made at Grand Crossing shortly after the plant was put in operation are tabulated herewith. Owing to the fact that the mill had not attained its full capacity and to the high efficiency of the heating furnace the rate of gasification during the test was not high.

On Kelleyville mine run, an Illinois coal, the following results were secured, the first table giving the analyses of the gas and the second the results obtained in the heating furnace:

View on Coal Floor.

THE MORGAN CONTINUOUS GAS PRODUCER.

Kelleyville Mine Run (Illinois) Coal—Analysis of Gas.

Date.	Time.	Per cent. in volume. CO^2.	O.	CO.	H.	Steam pressure. Pounds.	Depth of fuel bed. Feet.
		Producer No. 1.					
April 10	10.30 a.m.	8.0	0.0	23.8	14.7	10	4.5
April 19	6.00 p.m.	9.2	0.0	17.8	11.2	15	4.5
April 19	2.00 a.m.	8 6	0.0	21.5	12.7	5	5.5
April 20	11.30 a.m.	7.8	0.0	21.5	15.6	10	4.5
April 20	6.00 p.m.	5.6	0.0	24.7	18.1	5	5.5
April 20	2.00 a.m.	6.0	0.0	25.8	14.4	5	4.5
April 23	1.00 p.m.	6.8	0.0	22.6	14.0	10	2.5
April 24	1.00 p.m.	5.2	0.0	20.8	9.0	10	2.5
April 25	9.00 p.m.	7.8	0.0	21.0	13.7	10	2.5
Averages		7.2	0.0	22.1	13.7	8.8	4.05
		Producer No. 2.					
April 19	2.00 p.m.	7.4	0.0	28.5	18.0	10	4.5
April 19	10.50 p.m.	5.4	0.0	26.6	14.6	10	5
April 19	6.00 a.m.	5.4	0.0	23.3	9.8	10	3.5
April 20	3.30 p.m.	7.0	0.0	22.7	13.0	10	3.5
April 20	10.00 p.m.	5.4	0.0	25.8	14.8	10	5
April 20	6.00 a.m.	5.4	0.0	21.3	16.0	5	4
April 24	9.15 a.m.	6.6	0.0	21.4	12.6	20	3
Averages		6.1	0.0	24.2	14.1	10.7	4.07

Results in Heating Furnace.

Mill running day and night April 18-20; after April 20, day turn only.

Date.	Turn.	No. of producer.	Coal per hour per sq. foot prod. area.	Coal used per 12 hours. Pounds.	Steel heated 12 hours. Pounds.	Steel heated per hour. Pounds.	Coal per ton of steel heated. Pounds.
April 18..	Night	1	5.5	3,317	108,224	9,019	138
April 18..	Night	2	5.6	3,341			
April 19..	Day	1	9.5	5,716	138,320	11,527	174
April 19..	Day	2	8.4	5,033			
April 19..	Night	1	7.8	4,680	134,368	11,198	186
April 19..	Night	2	10.8	6,473			
April 20..	Day	1	8.3	4,053	132,240	11,020	187
April 20..	Day	2	10.1	6,077			
April 20..	Night	1	9.7	5,826	144,704	12,059	188
April 20..	Night	2	10.5	6,300			
April 21..	Day	1	9.7	2,896	6 hrs. 82,080	13,680	160
April 21..	Day	2	9.8	2,944			

Analysis of coal: Volatile, 37.32; fix carbon, 42.25; ash, 12.26.
Analysis of ashes from producer: Combustible, 3.95; ash, 96.05; total, 100.00.

On Kentucky lump, also an Illinois coal, the following results were secured.

New Kentucky Lump (Illinois) Coal.—Analysis of Gas.

Producer No. 1.

Date.	Time.	Per cent. in volume. CO^2.	O.	CO.	H.	Steam pressure. Pounds.	Depth of fuel bed. Feet.
April 10....	12.00 m.	6.8	0.0	23.0	16.0	20	5.5
April 10....	4.00 a.m.	6.6	0.0	26.5	16.4	20	5.5
April 11....	1.15 p.m.	6.2	0.0	24.6	22.5	15	4.5
April 11....	6.30 p.m.	5.2	0.0	26.0	14.8	10	6.5
April 11....	12.00 m.	6.2	0.0	26.8	16.0	13	5.0
April 12....	6.00 a.m.	4.8	0.0	27.4	20.3	10	3.0
April 12....	6.15 p.m.	10.0	0.0	21.0	12.5	15	2.5

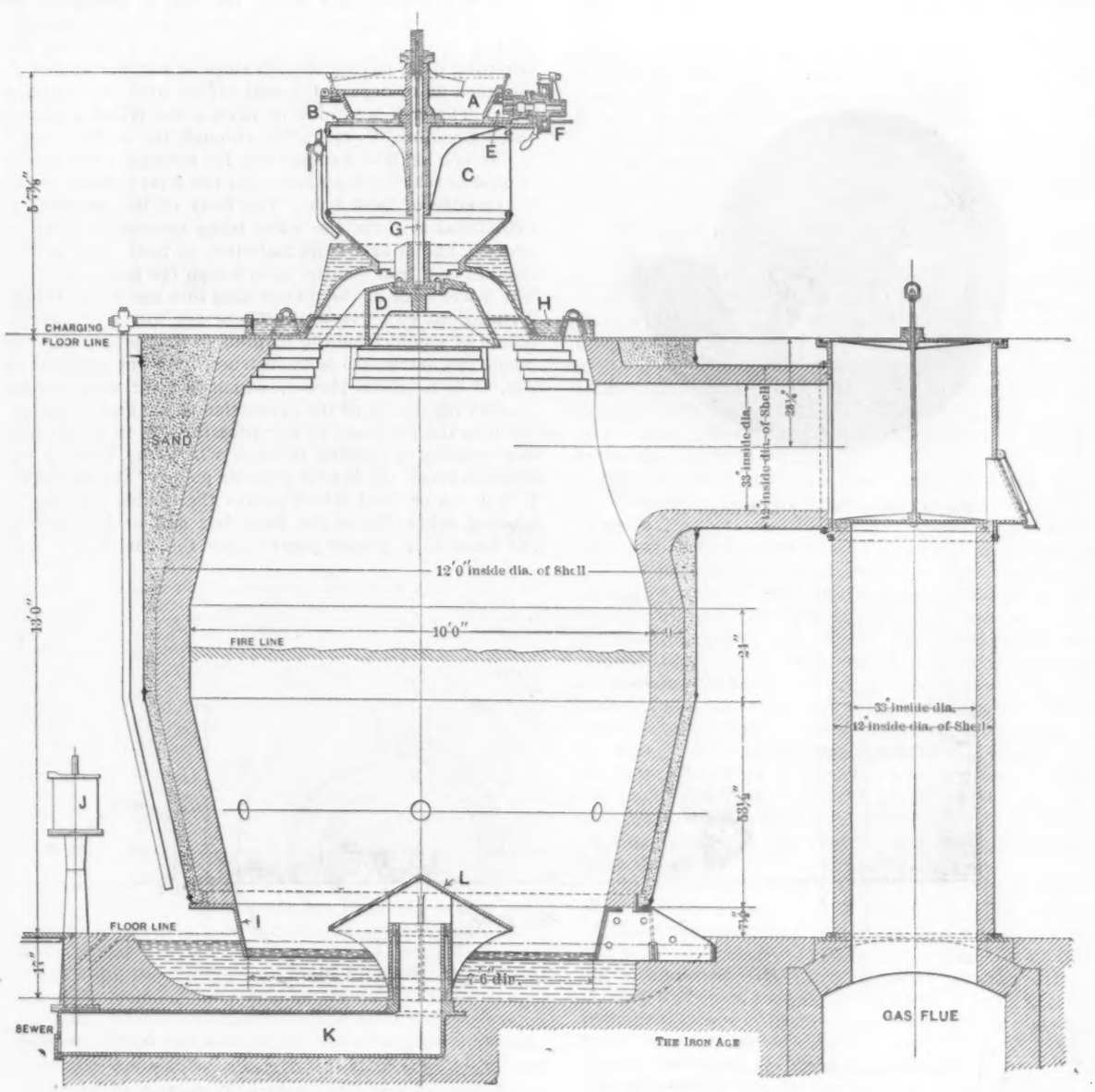


Fig. 2.—Vertical Section.

THE MORGAN CONTINUOUS GAS PRODUCER.

Date.	Turn.	No. of producer.	Coal per hour per sq. foot prod. area.	Coal used per 12 hours. Pounds.	Steel heated 12 hours. Pounds.	Steel heated per hour. Pounds.	Coal per ton of steel heated. Pounds.
April 22..	Night	1	..	....			
April 22..	Night	2	..	....			
April 23..	Day	1	9.7	5,791	156,256	13,021	173
April 23..	Day	2	10.5	6,279			
April 23..	Night	1	..	....			
April 23..	Night	2	..	....			
April 24..	Day	1	9.3	5,569	150,480	12,540	148
April 24..	Day	2	7.3	4,368			
April 24..	Night	1	..	....			
April 24..	Night	2	..	....			
April 25..	Day	1	6.0	2,108	7 hrs. 81,776	11,695	122
April 25..	Day	2	6.7	2,345			
Averages...		1	8.4	5,069	139,594	11,751	164
		2	8.8	5,353			

Date.	Time.	CO^2.	O.	CO.	H.	Steam pressure. Pounds.	Depth of fuel bed. Feet.
April 12....	12.00 m.	6.4	0.0	24.0	17.4	25	3.5
April 13....	6.00 a.m.	6.18	0.0	25.5	23.2	10	3.5
Averages.....		6.5	0.0	24.9	16.6	15.3	4.33
Producer No. 2.							
April 10....	2.00 a.m.	9.0	0.0	18.4	17.6	5	4.5
April 11....	8.00 a.m.	5.4	0.0	28.0	19.0	10	5.5
April 11....	3.00 p.m.	4.0	0.0	25.6	14.7	5	5
April 11....	9.00 p.m.	3.4	0.0	22.3	12.7	5	5.5
April 11....	3.15 a.m.	6.0	0.0	25.5	11.6	15	3.5
April 12....	1.30 p.m.	4.8	0.0	29.2	17.5	10	3.5
April 12....	3.00 a.m.	4.2	0.0	26.9	13.8	5	3.5
April 13....	8.30 a.m.	6.4	0.0	24.8	17.8	10	4.0
Averages.....		6.0	0.0	25.0	16.6	8.1	4.33

Results in Heating Furnace.

Date.	Turn.	No. of producer.	Coal per hour per sq. foot prod. area.	Coal used per 12 hours. Pounds.	Steel heated 12 hours. Pounds.	Steel heated per hour. Pounds.	Coal per ton of steel heated. Pounds.
April 10..	Night	1	8.0	4,832	143,184	11,932	142
April 10..	Night	2	7.0	4,229			
April 11..	Day	1	7.6	4,550	119,472	9,956	193
April 11..	Day	2	9.6	5,761			
April 11..	Night	1	8.7	5,242	128,592	10,716	163
April 11..	Night	2	6.9	4,156			
April 12..	Day	1	6.3	3,758	105,792	8,816	182
April 12..	Day	2	8.1	4,839			
April 12..	Night	1	7.0	4,191	144,400	12,033	136
April 12..	Night	2	7.6	4,562			
April 13..	Day	1	8.1	4,897	131,328	10,944	164
April 13..	Day	2	7.9	4,725			
Averages...		1	7.6	4,578	128,795	10,733	163
		2	7.9	4,712			

Steel, 1¾ inches square x 30 feet, billets.

Analysis of coal: Volatile.....38.20; Fix carbon.....54.59; Ash.....7.21

Fig. 3.—Plan View of Distributer.

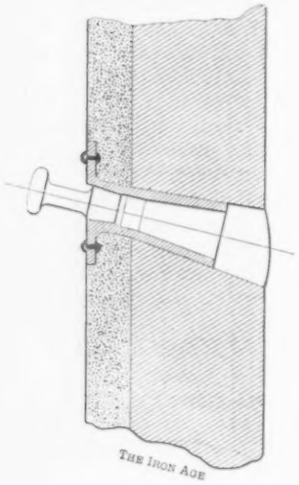


Fig. 4 —Section through Poke Hole

supply to prevent oxidation of the metal being heated. As showing what is possible in the heating of cold steel with producer gas, the Grand Crossing mill, operating single turn, showed 1.6 per cent. total oxidation in and out of the furnace for the first five months, including the period of starting an entirely new plant. As the item of waste metal due to the excess of oxygen within the furnace is usually the largest one connected with the operation of heating, the importance of uniform conditions is readily appreciated. Uniform conditions cannot be obtained in the furnace unless the gas supply is uniform, and this is not possible unless the fuel is fed to the producers continuously and uniformly.

The full construction of this producer is shown in the accompanying drawings. Referring to sectional view, Fig. 2, A is a hopper into which the coal is primarily deposited; B is a register valve controlling the admission of coal to the tank C, directly below; D is a rotating distributing disk, having sloping sides of varying angles, so designed as to deposit the coal evenly over the charging area. The disk is rotated by bevel gears E and a special ratchet motion, F, operating through the vertical shaft G. H is a shallow annular pan for holding water which is used to seal the poke holes and the joint formed by the lower edge of tank base. The body of the producer is cylindrical in form, the walls being unusually heavy to prevent undue loss from radiation of heat. I is a substantial cast iron mantle, upon which the producer rests. The lower edge of the mantle dips into the water below, forming an effective seal. There are but four narrow points of support for the mantel, so that practically the whole circumference is unobstructed for the removal of ash. J is a steam blower, which is built with special view to regulation of the proportion of air and steam going into the producer at any pressure. K is a cast iron box forming a conduit through which the blast is enabled to reach the lowest possible point of the producer. L is a cap or hood which serves the double purpose of keeping ashes out of the blast box and of distributing the blast to a proper point under the fuel bed. The

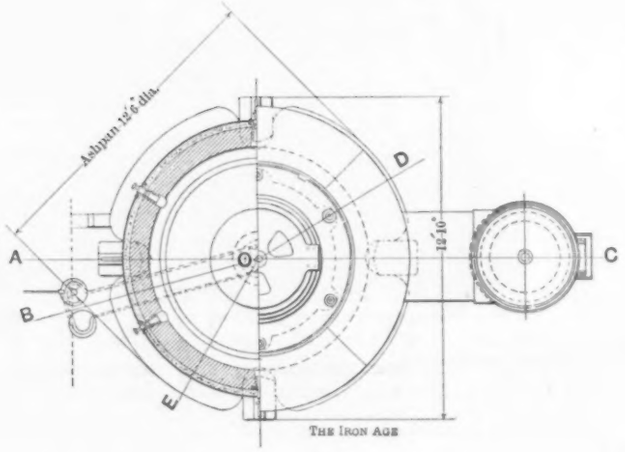


Fig. 5.—Sectional Plan.

THE MORGAN CONTINUOUS GAS PRODUCER.

Samples of gas taken March 19-20, when gas was furnished by one producer only, gasifying coal at the rate of 16.8 pounds per square foot of producer area, analyzed:

Carbonic acid	8.4
Carbonic oxide	21.8
Hydrogen	21.6

When running the producer at the highest rate of combustion almost no hand poking was required, and the ashes were free from clinkers and extremely low in combustibles. In fact, the results were equal to those obtained with the best Pittsburgh coal.

In a heating furnace the most important result of having a uniform quality of gas is a proper control of the air

hood is circular in form, proportioned to the diameter of the producer. All of the blast is delivered from under the edge of the hood at a uniform level and at a point approximately under the center of area of the charging surface.

Referring again to the feeding mechanism, the coal is supplied to the hopper by any convenient means and dropped into the coal tank below as needed. The coal tank can be made large enough to receive any desired quantity of coal, but two or three hours' supply is usually deemed sufficient. The slow, rotating motion of the distributer causes the coal to work out of the tank and fall over the edge of the distributer. The speed of the distributing disk is from 0 to 10 or 15 revolutions

per hour. Speed adjustments are made by an adjustable guard moving under the ratchet pawl.

Pacific Coast News.

SAN FRANCISCO, CAL., January 7, 1901.—The new year has been signalized by copious rains, which have extended to every section of the State and which have been especialy welcome in the south, where the drought has at last been broken. This signifies a prosperous year for all California, which with grain, fruit, oil and gold bids fair to sell more to the world than at any time during the past 20 years. The outlook for all producing interests is good, and the consumption of iron, steel, hardware, &c., will be unprecedentedly large. So also will be the output of our foundries and other manufacturing establishments. Their output in 1900 was the largest since the olden days, when the Comstock poured its riches into San Francisco's lap. Then the manufacture of mining machinery here reached a point that it has never since attained. Of course the business was altogether a home one, but a foreign demand soon sprang up that has never since ceased. But last year the fires were lighted all along the manufacturing portion of the city—in some instances all night as well as all day. The business will be larger this year than ever.

As to the jobbing houses, all of them have increased their facilities during the year, some of them having had new warehouses built for them, and altogether the outlook for the business campaign of 1901 is the best ever seen in this city.

The export business of 1900 exceeded that of any other year in our history. Especially is this true of the shipments to the Hawaiian Islands. The values of these for the past six months have not been entered at the Custom House, but they can easily be estimated as equal to those for the first six months of the year. I shall therefore give approximately the values of the principal articles for the whole year. The following are the figures:

Exports to the Hawaiian Islands in 1900.

Bar iron	$56,000
Steel rails	50,000
Steel sheets and plates	46,000
Castings	650,000
Tools	50,000
Pumps, etc.	270,000
Sewing machines	50,000
Boilers and parts	150,000
Machinery	2,000,000
Nails	40,000
Pipe Iron	500,000
Safes	16,000
Stoves	25,000
Hardware, &c. (various)	300,000

This makes a total of $4,203,000, or about 35 per cent. of the exports to the islands for the year, which have been in round numbers $12,000,000. Of the machinery, which forms about one-half the whole, the greater part is of California manufacture. But taking all the articles specified, most of them are of Eastern production and shipment. Still our manufacturers have benefited more from this than from any other line of export trade, and they are continually adventuring into new fields, and will run the East a good race for anything and everything needed in the trade of the Pacific.

The instruction of Judge Morrow of the United States Circuit Court in the case of the suit against the Tile Mantel and Grate Association of California, the Columbia and the United States Encaustic Tile companies and several hardware firms, has resulted in a verdict for damages in favor of the plaintiff, Edward Lowry. The defendants do business in San Francisco, Sacramento and San José. The gravamen of the charge against them is that they constitute a trust and that they were pledged not to do business with any person, firm or corporation not members of the association. It is also alleged that a unanimous vote was necessary in order to elect members to the association. The court held that all this was in restraint of commerce between States. The court also drew attention to the fact that prices have been raised two or three times. Should the verdict be sustained it will be a matter of serious interest to all associations having for their object, expressed or implied, the regulation of prices.

The mammoth steamship "American" of the Hawaiian-American Steamship Company has arrived in port and will soon be followed by others, so that the transportation question is in a fair way of being settled to San Francisco's entire satisfaction. J. O. L.

A Meeting of Buffalo Forge Company's Representatives.

In order to secure the many advantages of personal acquaintance and free exchange of ideas among their various representatives, the Buffalo Forge Company, during the first week of the new century called together their entire staff of traveling men and other officials, some of whom never met before. As a result of this contact and intercourse, the interests of harmony and unity throughout were thought to be well served, while securing at the same time the mutual benefits of thorough discussions of the engineering and commercial problems encountered in the field of heating, ventilating and drying, mechanical draft, forge installation, and the similar lines of the company.

The opportunity given for the presentation of individual ideas upon the subject of procuring customers and following up business, as well as upon the best methods to be employed in different cases was likewise made use of to the benefit of all present. D. W. Roper, who for the past year has been traveling in England and Europe in the interest of the Buffalo Forge Company, returned to this country in season to attend the meeting at Buffalo, and was able to impart much that was of interest and value concerning trade conditions and outlooks across the Atlantic.

The entertainment provided included a box party at a leading Buffalo theatre and a banquet at the Iroquois Hotel, covers being laid for 30. H. W. Kreinheder, of Buffalo, who was instrumental with valuable aid and suggestions in the founding of the Buffalo Forge Company, was the guest of honor and officiated as toastmaster, while on his right and left were seated William F. Wendt and Henry W. Wendt, senior and junior members of the firm. Mr. Kreinheder was especially happy in his selection and presentation of toasts. The phenomenal growth of the company, as brought out by the contrast between the past and present conditions, as well as their present prosperity and bright prospects were the main themes of the post-prandial remarks. Numerous facts concerning the early history of the firm were mentioned which were doubly interesting as portraying various phases in the growth and development of a large industry.

The company had their beginning in a small office in Buffalo about a quarter of a century ago, the work being done in an outside shop. After one change, the shop and office were located in a small two-story frame building at the corner of Broadway and Mortimer streets, Buffalo, and since that time the company have expanded without a check until the shops now occupy the entire block bounded by Broadway, Chaplain and Tousey streets. So rapid has been the growth that the original frame building had to be removed to make room for improvements, and even now, with the recent completion of a large six-story shop, the company are hampered for lack of space.

American Machinery for Tasmania.—C. J. Trent, formerly a representative of Fraser & Chalmers, Chicago, and Richard Golden, an English capitalist, have been in Chicago the past week looking for machinery in the interest of the North Mount Lyell Copper Company. The company have acquired a large area of mining lands in the island of Tasmania. It is reported that contracts for all the machinery have not yet been placed, but the contracts for the copper smelting machinery have been placed with the E. P. Allis Company, Milwaukee, for motors and generators with the Bullock Electric Mfg. Company, Cincinnati, and a 40-ton traveling crane, and its runway, with Pawling & Harnischfeger, Milwaukee.

Eyelet Machines.

We illustrate herewith one of a class of machines about which so much of mystery has hung for many years. Such automatic machines as were devised to make eyelets were closely guarded, and the operators practically sworn to secrecy, so that the entire business of eyelet making in this country was until recently confined to a few concerns.

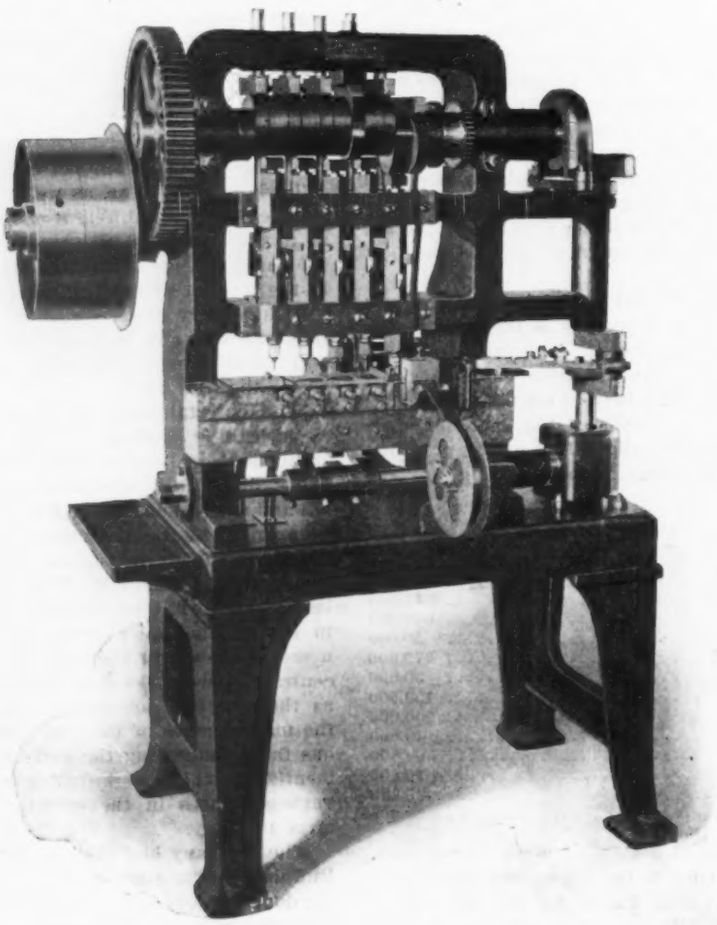
There are now three methods successfully employed in the manufacture of eyelets, the oldest probably being the application of separate power machines to duplicate foot press operations. Foot and screw presses are still used almost exclusively for this work by European manufacturers.

The process long employed in Eastern Massachusetts is to have a series of separate machines, each of which is provided with suitable automatic feed, so that the pieces are passed along from machine to machine until completed. Some work may require four and some as many as seven operations through as many machines, the first of which cuts and draws a shell, which is subsequently coaxed, one step at a time, into the shape required.

Another process successfully employed in the manufacture of certain classes of eyelets is one in which a ribbon of thin metal, 4 or 5 inches in width, is automatically fed intermittently about 3 inches at a time, under a gang of hundreds of punches in a press which indents it as much as the metal will stand without rupture; then after annealing it is passed through another similar press, the punches of which carry the process still further, and finally the strip goes through a press provided with cutting tools which cut out the hundreds of complete eyelets at each stroke. It will be seen that in this process the tube of the eyelet is made by stretching and drawing down only so much of the metal as was contained within the size of the hole, so that when finished the metal in the head or flange is much thicker than in the tube.

In still another direction mental activity resulted in the production of a machine which not only cuts the blank from a strip, but passes it along automatically by suitable ingenious transfer mechanism to one after another of a series of punches and dies, until completed and dropped out. This combination by gradual development has resulted in a machine whose prototype is the one producing to-day the bulk not only of first-class eyelets, but a great variety of small brass parts, such as shoe hooks, hollow rings, collar button posts, jewelers' settings, glove fasteners, grommets, &c. Its field of usefulness is constantly broadening, since the process employed is perfectly adapted to the rapid and economical manufacture of so many articles which can be blanked and finished without intermediate annealing.

The building of this and similar automatic machines has now become an important part of the business of the E. J. Manville Machine Company of Waterbury, to whom much credit is due for their careful study of this particular problem, and through them we are able to present to our readers, for the first time, the accompanying illustration. This class of machine was originally devised for the rapid manufacture of percussion caps and eyelets, thus replacing foot presses by embodying in a power machine a series of separate cam-actuated plungers carrying foot press tools. Combined with these is a carrying slide by which each piece is transferred, step by step, until each set of tools has acted on it. One piece is, therefore, completed at each revolution of the press. To meet different requirements these machines are designed in various sizes and can be had with three or more, up to eight plungers. As will be seen from the illustration, the metal is fed from the coil or continuous strip, from the reel at the front of the machine, and while the scrap passes to the rewinding reel at the back, the blanks cut from it are pushed into the carrier for subsequent operations. Such a machine will produce from 80 to 150 pieces per minute, the speed, of course, depending on the nature of the article.



EYELET MACHINE.

We are informed that among the manufacturers in

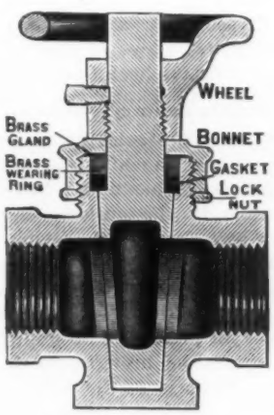
Waterbury and vicinity there are more than 300 machines of this type constantly in operation, producing their quota of the wonderful output for which that city is justly famous.

Champion Tin Plate Plant Absorbed.

The plant of the Champion Iron & Steel Company, Muskegon, Mich., has been purchased by the American Tin Plate Company, who assumed charge of the property last week. This is the first independent tin plate plant taken into the combination since their organization two years ago. The Champion Iron & Steel Company, who were successors to the Michigan Iron & Steel Company, were incorporated in the latter part of 1899 under the laws of Illinois with a capital of $500,000, the concern being owned principally by Chicago stockholders. The officers were R. L. Henry, president; D. B. Scully, vice-president; Theo. D. Morgan, general manager, and Walter E. Stoy, secretary and treasurer. The equipment of the concern consists of an open hearth steel plant, bar mill and eight tin plate mills. The tin plate plant was started early last summer and has been in steady and successful operation, with a weekly output of from 800 to 1000 boxes. An enlargement of the company's plant was recently reported to have been decided on in order to keep up with their growing business. It was stated that the manufacture of bar iron would be abandoned and new tin plate mills be added in the place of the bar mill. The product of the plant is said to be sold several months ahead at favorable prices.

The Bordo Plug Valve.

The valve here shown is a combination of the valve and cock principles, and is so constructed that a packing ring rests on the plug, which is compressed to the wall of the body by a brass wearing ring and a brass



THE BORDO PLUG VALVE.

gland. The plug, packing, brass wearing ring and gland are all held in position by the bonnet, which in turn is held in position by a lock nut. Means are provided by a threaded stem on the plug to prevent jamming by a correspondingly threaded wheel, lightly adjusted to the bonnet but held in place by a set screw. The perfect adjustment of these parts forms a mechanically balanced plug valve. The operators are at all times in a position to regulate the plug for any desired pressure for which the valve is intended, all working parts being of metallic construction; unequal expansion and contraction is eliminated. This valve has been tested on boiler blow off services and found to give excellent results. The 4-inch valve can be operated against 150 pounds pressure by a half turn, which insures a full opening with a 9-inch wheel. The Bordo Valve Company of Philadelphia manufacture these valves in sizes up to and including 4 inches, and are preparing to make still larger sizes.

The Blast Furnace Power Syndicate, Limited, of Basildon House, Moorgate street, City, London, England, have recently installed a plant at the Sheepbridge Iron Works, Chesterfield, which uses blast furnace gas for driving a 100 horse-power gas engine to provide power for a pipe foundry. Through a dynamo it provides current for lighting, for blowers, traveling cranes and other machinery. The installation was made under the patents of B. H. Thwaite, the first to utilize furnace gas for power, and Frank L. Gardner, an American.

The Page Woven Wire Fence Company.

Chicago advices state that arrangements have been made to take the affairs of the Page Woven Wire Fence Company out of the hands of the receiver. The company have two plants, one at Monessen, Pa., and the other at Adrian, Mich. The Monessen plant has open hearth steel furnaces and rod and wire mills. The Adrian plant is the original establishment of the company and manufactures woven wire fencing. The company's property passed into the hands of a receiver August 10, 1900. They had given short time paper to cover a large indebtedness created by very expensive operations at Monessen,, and, to protect all interests, were obliged to apply to the courts for a receiver. The total liabilities of the company at that time are stated to have been $648,314. Under the management of the receiver the company continued in business and are stated to have conducted their manufacturing operations profitably. During this time arrangements have been made for a reorganization. The plan of a reorganization was worked up by Parker & Pain, Chicago attorneys, who interested Chicago and Michigan capital in the enterprise. The reorganization was assisted by stockholders of the old company agreeing to scale their holdings to pay the necessary expense. The new stockholders were permitted to name five new directors, giving them a majority in the board.

In 1899 the original company organized under the laws of Illinois with a capitalization of $40,000. This was increased out of the profits to $240,000. When the reorganization was accomplished the value of all assets above all liabilities, except capital stock, was $547,-721.84. This was put into the reorganization at $500,000. The new interests have put into the company $500,000 also, to bring the capital stock up to $1,000,000. The total indebtedness of the company has been discharged and they are now in a position to continue operations without embarrassment. The company have excellent facilities at their Monessen plant for securing all materials at minimum cost.

The Central Metal Trades Association.—The quarterly dinner of the Central Metal Trades Association was held in Cincinnati on the 10th. It was attended by a number of Cincinnati's leading manufacturers and business men. Dr. R. G. Boone, Superintendent of Schools, was the principal speaker. He addressed the association on "Technical Education," and in his speech strongly advocated manual training in the schools. Among the other speakers were J. C. Hobart, who spoke on "Electrical Transmission;" Fred. Holtz, whose subject was "Cost Keeping;" J. H. Day, who spoke of "Foreign Patents," and William Lodge, who chose "Foundry Practice" as his subject. Those present were Walter Laidlaw, H. C. Hoefinghoff, H. M. Norris, Sherman C. Schauer, Fred. K. Holtz, E. M. Chase, C. W. Walters, G. A. Mayer, B. B. Quillin, J. H. Day, Jacob Dietz, Henry Dreses, Oscar W. Mueller, Henry Korb, William Lodge, L. B. Weber, E. F. Du Brul, Albert Du Brul, Napoleon Du Brul, J. C. Hobart, E. N. Atkins, C. N. M. Atkins, C. M. Conradson, M. E. Lyons, F. M. Dudley, S. P. Egan, R. K. Le Blond, J. M. Curran, R. G. Boone, J. M. Robinson.

Rogers, Brown & Co., Monadnock Building, Chicago, have favored their customers with an unusually handsome calendar, printed in colors. The main feature of the calendar is a representation of an athletic workman standing in the casting house of a blast furnace in which a cast is just being made. The picture is of original design, and is the work of the artist, Curtis Gandy, of Chicago. It is a vivid representation of an actual scene.

The Ship Subsidy Bill.

WASHINGTON, D. C., January 15, 1901.—The most vigorous work on the part of the advocates of the pending Ship Subsidy bill that has marked the campaign since the beginning of the session has been accomplished during the past week, with the result that the position of the measure has been materially improved, although the serious obstacles in the way of its ultimate passage have not been removed. The managers of the bill, however, have undertaken to make a conclusive test, and the outcome is awaited with much interest.

When the House and Senate reconvened for the holiday recess the managers of the bill were disappointed to find very little progress had been made in harmonizing the views of a considerable number of Republican Senators whose votes are regarded as necessary to the passage of the bill. Among the Senators who were not disposed to look with favor upon the measure were McMillan and Burrows of Michigan, Nelson of Minnesota, Allison of Iowa and others representing Western States, whose constituents, it has been claimed, have nothing to gain by the passage of the bill. At no time has it been stated that these Senators would vote against the bill if it were brought to a direct issue, but in view of the important legislation now pending it has been for some time conceded that the subsidy bill, if defeated, would probably owe its death to being crowded from its position, rather than to a direct negative vote. Thus it has been a comparatively easy matter, up to the present time, to stave off a vote on the bill by urging the consideration of other measures.

Friendly Amendments.

Within the past week, however, Senators Hanna, Frye, Aldrich and others have begun active work looking to the development in the Senate of a sentiment favorable to the bill strong enough to enable its managers to bring it forward whenever an opportunity offers, with an assurance that it will not be displaced for the sole purpose of preventing a vote upon it. The lake shipbuilding interest and the interests of the Pacific Coast, which it has been claimed have not received proper recognition in the bill as framed by the Commerce Committee, have been represented to some extent in the opposition of Senator McMillan, and with a view to bringing them into line he has undertaken at the request of the managers of the bill to draft a series of amendments that will make the measure acceptable in the quarters referred to. His willingness to undertake this work has greatly encouraged the friends of the bill to count upon his co-operation to secure two or three votes heretofore regarded as in doubt.

The measure as reported by the Commerce Committee has been strengthened by two amendments made during the week, one of which extends the benefits of the bill to ships engaged both in the foreign and coastwise trade, such as those of the Panama Railroad line, subsidy being granted to the extent that the cargo is foreign. Another amendment permits a majority of the owners of a steamship to sign contracts with the Secretary of the Treasury, instead of requiring all the owners to sign; and in lieu of a bond, the Secretary is authorized to retain 25 per cent. of earned compensation as security for the performance of the contract. Senator Frye is daily at work upon the bill, perfecting its administrative features, and declares his willingness to accept any amendment that will improve the measure. While thus endeavoring to perfect the bill, the Republican leaders are emphasizing in public interviews and private statements the fact that the minority have no proposition to submit, except Senator Vest's free ship bill. On this point, Senator Aldrich in an authorized statement, says:

"There is some difference of opinion as to what should be done, but as I understand it there is no differenec whatever, at least among Republicans, as to the necessity of doing something. I do not see anybody who is opposing this measure offering anything better. It is like a tariff bill; we hear of a great outcry against such bills, but we never get any substitutes except those offered by free traders and Democrats, which would be utterly ruinous to the country. The only substitute that I know to the existing bill is the free ship bill offered by Mr. Vest. There is the same difference between the bill reported by the Senate Committee on Commerce and the free ship bill offered by Mr. Vest that there is between the Republican tariff bills and the Democratic free trade bills. We have got to the pass when something must be done, not only to preserve what little shipping we have in the foreign trade, but to increase it. The bill in the Senate may perhaps be amended to advantage. I cannot tell fully as to that; but we need some bill, and this one is the best bill on the subject that has been brought before Congress, and I think it will pass."

Equally emphatic statements have been made by Senator Hanna, Representative Ray, chairman of the House Committee on the Judiciary, and other prominent Senators and Representatives, and the widest possible circulation has been given to their declarations by a well equipped literary bureau, which the friends of the bill in and out of Congress are maintaining here. The most important statement made by the friends of the measure during the week has been that of Senator Frye, which was published in a New York newspaper, and in which he assumed full responsibility for the pending bill, which he stated was introduced by Senator Hanna at his request, he being absent in Paris on the Spanish-American Peace Commission. Senator Frye replies to the critics of the bill at some length and closes with the statement that the measure is as nearly perfect as such a bill can be made without a practical test. Senator Hanna's contribution, which appeared a few days ago in the London *Daily Mail*, and was cabled in part to the American daily press, has done much to remove the impression which has been growing stronger during the past fortnight that the managers of the measure have given up hope of its pasage at the present session and were about to abandon it. The combined efforts described are designed to develop the full strength of the measure in the Senate, and it is anticipated that within a few days an opportunity will occur for a vote that will show conclusively whether the views of Senators Frye, Hanna and their colleagues have been optimistic or not.

Parliamentary Obstacles.

The parliamentary obstacles in the way of the shipping bill—which since the bill was displaced from its position as "unfinished business" have been the most important features in the outlook—cannot be said to have yielded at any point to the vigorous work of the advocates of the bill. In order to bring the measure up for consideration it must now be taken up by an affirmative vote of a majority of the Senate, and therefore must contest for position with any other measure of importance that may be brought forward. There now remain 38 legislative days of the present session, and so far as the Senate is concerned none of the regular work of the session has yet been accomplished. The pending bill for the reorganization of the army, which it was predicted would be disposed of in two or three days, has dragged along for two weeks. The legislative appropriation bill, one of the most important of the annual budget measures, is now on the Senate calendar and will be called up as soon as the army bill is out of the way. Ten other annual appropriation bills, the failure of any one of which would be regarded as sufficient reason for reassembling Congress in extra sesion, will then follow rapidly, each taking from one to three days. The war revenue reduction bill, which has just been taken up by the Senate Finance Committee, will probably be reported in another fortnight, and is counted upon to occupy at least a week. The river and harbor bill, with its enormous total of $50,000,000 or $60,000,000 will occupy considerable time and there is promise of two or three days' discussion upon the so-called Grout anti-oleomargarine bill. It will be noted that the Nicaragua Canal bill and a number of other measures of national importance are not included in this summary of legislation, and no mention is made of the Senate private calendar, which is loaded with hundreds of private bills that will press for attention in the last month of the session.

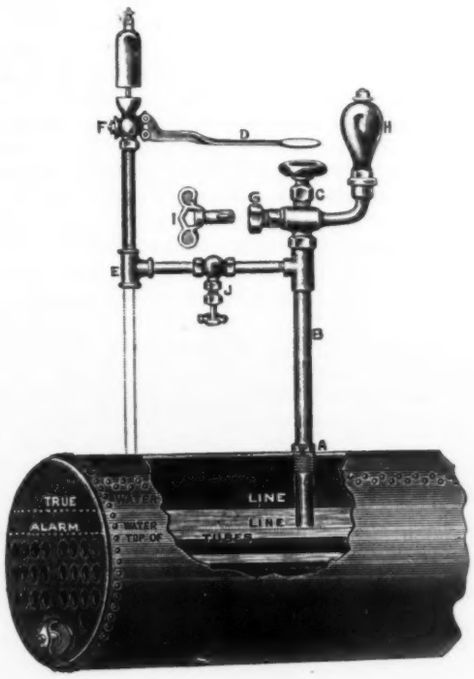
Summing up the situation as to the subsidy bill as

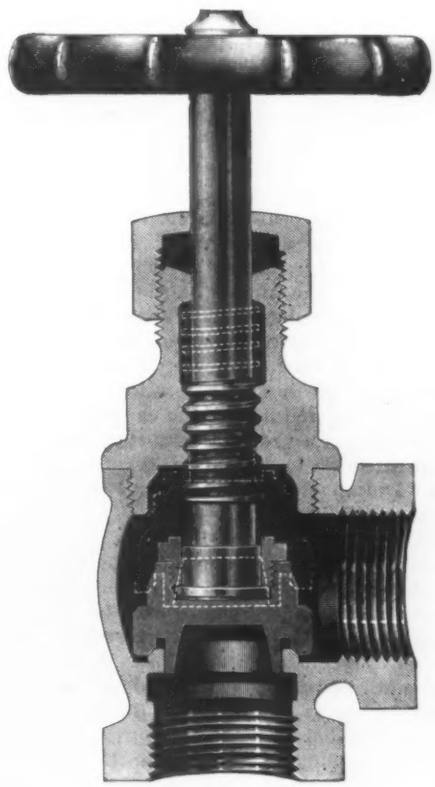
briefly as possible, it may be said that while the parliamentary situation is daily growing less favorable, the friends of the measure are gaining adherents and are preparing themselves with great care and skill to take advantage of any opportunity that may arise to bring the bill forward. If brought to a direct vote to-morrow there is no doubt the measure would pass both houses.

W. L. C.

The Crane Low Water Alarm and Blow Off Valve.

A short time ago some of the States enacted a law stipulating that low water alarms "shall be of a type capable of being tested by the Factory Inspector of Workshops and Factories." The Crane Company of Chicago therefore found it necessary to so change their low water alarm as to meet this requirement. They provided an additional valve, with pipe and fittings, which enabled the inspector to make a test at any time. The method of attaching the alarm will be understood from the engraving. As long as the water does not go below the low water line the water in the tube B prevents the steam from reaching the fusible plug. The instant the water falls below the water line the steam rushes in, fuses the plug C, and, escaping through the hole in the wheel, raises the lever D, thereby opening the valve in the whistle F and allowing the steam in the pipe E to sound the alarm. To renew the fusible plug the valve G is closed, the nut C unscrewed and a new gasket inserted. Then the nut is replaced and the pipe B allowed to cool before the valve G is opened. The key I is removed to indicate that the valve G is open and ready for operation again.





THE CRANE LOW WATER ALARM AND BLOW OFF VALVE.

The seat of the blow off valve, shown in the next engraving, is on the outside, which prevents sediment lodging at this point. The projection on the under part of the disk prevents any discharge taking place until the seats have become widely separated. This obviates wire drawing.

A New Lake Shipbuilding Plant.—Advices from Cleveland, Ohio, state that a company have been organized by H. A. Garfield, son of the late President Garfield, to build a large shipbuilding plant between Mentor and Willoughby, on the shore of Lake Erie, about 30 miles east of Cleveland. Vessels will be built at this plant to take soft coal to Europe. The Pittsburgh Coal Company will supply the coal. A large marsh will be dredged out and the plant installed on the edge of the artificial channel thus formed, within a few hundred yards of Lake Erie. The enterprise has been launched with the belief on the part of the promoters that the Ship Subsidy bill will become a law and the coal fleet will get part of the subsidy. J. C. Gilchrist, a large vessel owner of Cleveland, is one of the main figures in the company. A branch railroad will be built to take the coal from the Wheeling & Lake Erie Railroad direct to the loading plant.

Barton, Maas & Co.—One of the newest and most enterprising of Chicago's foundries is that of Barton, Maas & Co., Nineteenth and Rockwell streets. The foundry was opened May, 1899, by three former employees of the Siemens & Halske Company—namely, W. D. Barton, foreman; H. K. Maas, a practical molder, and C. R. Smith, purchasing agent and chief clerk. When the business of the Siemens & Halske Company was sold to the General Electric Company these three formed a partnership and started the foundry, employing four men. Now they have a force of 75 molders, and occupy an office and foundry building of brick, 76 x 130 feet, with a frame annex, 16 x 60 feet. They have a Whiting cupola, and their own power plant, with a 40 horsepower Phœnix engine, and melt 16 tons per day. They are considering plans for a large addition, and intend to install another cupola. They have many orders on hand, and are now completing comparatively large contracts.

John S. Leng's Son & Co., iron and steel merchants, of 4 Fletcher street, New York, have been appointed sole agents in New York and the surrounding territory of the National Automobile & Electric Company of Indianapolis, Ind. They have opened a show room at 1964 Broadway, New York. The National carriages are made in nine styles, ranging in price from $1000 to $1750.

J. B. Doan & Co., machine tools, 68 and 70 South Canal street, Chicago, advise us that they will continue in business as heretofore, having decided not to make the combination mentioned some weeks since in these columns.

Lake Superior News.

DULUTH, MINN., January 6, 1901.—At a meeting of the directors of the Minnesota Iron Company this week Jacob L. Greatsinger was elected to the vacancy caused by the resignation of D. H. Bacon, president of the company. Mr. Greatsinger, while not a mining man, is an executive leader of the highest order and is thoroughly acquainted with the business of the company. He and Mr. Bacon have labored together for years to advance the interests of the Minnesota Iron Company, one as their president and the other as president and executive officer of the allied railway corporation. Mr. Greatsinger's advancement, therefore, is quite the proper thing. The selection was unexpected, but it meets with hearty approval from all who know the man. Mr. Greatsinger has a remarkable capacity for business. He never appears to be busy, but the affairs of the Duluth & Iron Range Railway, of which he is president, never seem to go awry, and move along quietly and smoothly. And the business of a 250-mile road, that handles in seven months 5,000,000 net tons of freight, and is dependent to a considerable degree on the caprice of wind and weather and the ability of ships to make schedule, is no sinecure.

The career of both the retiring and incoming president of this great mining corporation is a proof of the falsity of the now oft repeated statement that in these days of trusts a man has no show. Mr. Bacon began his career in mining as telegrapher at the Cleveland, Marquette range, at the age of 19. Mr. Greatsinger, when still younger, was a locomotive fireman. One studied the art of mining and rose through the successive steps of timekeeper, cashier, assistant superintendent, superintendent and manager to the presidency of the Minnesota Iron Company, and now to the chairmanship of the Tennessee Coal, Iron & Railway Company. The other turned attention to mechanics, became master mechanic of the Duluth & Iron Range in 1890 and three years later its president.

Mr. Bacon's career in Minnesota has been practically coincident with that of mining in the State. He did not come here till three years after mining had begun, but he inaugurated underground work and cut costs $1 a ton almost at once by his superior methods. His company were the first to crush the Lake Superior hard ores, which until he tried it was considered a practical impossibility by many leaders. Mr. Bacon's solution of the problem resulted in a positive saving, aside from any higher desirability in the ores, as the 6 to 7 cents a ton which crushing costs is more than offset by the elimination of hand sledging and by steam shovel loading, impracticable with the coarser ore. Since the advent of the Mesaba range the company have expended, largely under Mr. Bacon's direction, over $3,000,000 in purchase of mineral lands, and now hold more than 153,000 acres. As the result of their growing mineral activities their connected railway has increased mileage from 97 miles in 1887 to 250 now, they have expended millions in other improvements, &c., and have put in service a fleet of 22 steel ships of the largest size. The company are the chief miner in the Minnesota field and the second in importance in the world with their output of approximately 3,000,000 tons. Even this vast tonnage will probably be exceeded in 1901.

The next meeting of the Lake Superior Mining Institute will be held at Houghton late the present month. There will probably be a large attendance.

The Chicago & Northwestern Road is planning extensive improvements to its dock system at Ashland, and will spend nearly $100,000 in raising and repairing No. 2 the present winter. No. 1 was greatly improved a year ago. These lake ore docks require rebuilding or extensive repairs about every seven or eight years, the wear and tear being tremendous. Very little other work in the way of improvements will be carried out at lake ports during the winter. The No. 1 dock of the Duluth, Missabe & Northern will be rebuilt another year, and the Two Harbors extensions of the Duluth & Iron Range will then be well under way. As to railway extensions, the Duluth, Missabe & Northern will build some 10 miles this winter to the east end of the Mesaba range, the Eastern Minnesota will complete its 50-mile cut off, the Duluth & Iron Range will complete its double track work and extend to some mines, the Lake Superior & Ishpeming will change its tracks at Ishpeming, and the Chicago, Milwaukee & St. Paul will add to its new trackage in the Menominee district.

On the north side of Lake Superior the Zenith Zinc Company, operating a mine at Rossport, Ont., are getting out ore quite rapidly and now have some 2000 tons for shipment to Brussels. This ore runs about 50 per cent. and is sacked for shipment at the mine. A deposit of iron pyrites is being opened a short distance west of Fort William by the Davis Chemical Company of New York. The same concern are opening another deposit near Schrieber, east of Fort William, where there are some deposits of pyrites high in sulphur.

Now it is the standard non-Bessemer mines that are talking of famine. They are endeavoring to make the impression that there is a scarcity of the ores most in favor for foundry purposes. The ores of the Crystal Falls district of the Menominee range are standard in this connection, about 60 per cent. iron, and from ½ to 1 per cent. of phosphorus. The point made by these non-Bessemer producers is that while there is much non-Bessemer ore produced elsewhere it is chiefly used as a Bessemer mix, and that the Mesaba non-Bessemers are not suitable for any extensive use on account of fineness. The first proposition is correct. On the Menominee the Chapin and mines of its class, on the Vermillion the Minnesota, and on the Marquette many properties, though under the Bessemer limit, are used for the production of that iron. The second of the two propositions is not entirely correct, and furnacemen will use these high phosphorus Mesaba ores to a very large extent, especially if the lower range foundry ores are held high.

It is asserted that of the vast sum spent on the Menominee in a search for new ore bodies to take the place of those being exhausted not a dollar has found anything, which is to a considerable extent true, though not entirely so. There are new finds even there. Ten years ago there were ten mines producing a standard non-Bessemer ore in the Crystal Falls district, and their aggregate production was 450,000 tons. The past year there were five of these mines, with a production of 509,000 tons. Some of these are nearing their limit, it is true, but the figures do not indicate any alarming immediate danger of famine. Experience has proved that the end of a mine is usually a good deal further away than it looks. However, some of these Menominee properties are mining pillars and getting ready to quit.

There are now on the Menominee range many millions of tons of lean non-Bessemer ores, as there are on the Marquette millions of tons of lean Bessemers, and the time is certainly near at hand when freight will be paid on more proportion of waste than has been in the past. The proportion of iron in the analysis has already begun to decline, has been falling slowly and without any such cataclysms as the miners appear to expect. The furnaces have accepted the situation, as they must, and have made no fuss about it.

The Bird Iron Company have been formed to develop and operate the Voos exploration on the Menominee range, with the Chicago firm of Crerar, Clinch & Co. at the head. The property lies over the diorites, and experts think there is no ore there, but some very fine Bessemer has been found, and more of a rather lean non-Bessemer. Exploration will be vigorous, and if they succeed a new field for possible work will be developed. The Walpole, at Iron Mountain, has resumed after a close of some months. It will take two months to unwater. The Bristol has resumed sinking, and will develop from now on.

On the Marquette the Lucy is under negotiation for sale to the Northwestern Iron Company, and, if sold, will be opened. The mine was a heavy shipper at one time, but has done little of recent years. On the Mesaba the Stevenson has resumed work, and will stock for shipment. On the Vermillion the Minnesota Company are sinking a shaft on the north side of the hill at Soudan, and

will drive a tunnel through to their Montana shaft that will strike several ore lenses that have been found with the diamond drill. These will be opened and mined through Montana shaft, which will be recommissioned.

Another old mine in Houghton County, the Shawmut, is to be reopened and developed. The property carries the Winona lode.

Most of the new properties of the district are showing up well. Trimountain is carrying a very high percentage of copper, and is sinking rapidly. Michigan has begun the unwatering of the old Minnesota workings, having sunk under them and raised a hole. The mine has two shafts more than 800 feet deep. It is carrying a satisfactory percentage of copper in the lower workings. Mass has shipped more than $50,000 worth of mass and barrel copper from its development, without touching its stamp rock at all. The mine is down 900 feet in its No. 3 shaft, with good rock at the bottom. Champion mine is showing a rich lode. Victoria has shipped 15 tons of mass and barrel copper from its new workings.

At the new deep shaft of Tamarack the Calumet conglomerate lode has been drilled through and found to be 20 feet thick. It is exceedingly heavily mineralized. This shaft cannot add greatly to the production of the mine for many months, and will scarcely show its importance till next year.

There will be but little gain in production in the lake district the present year, and what there is will be chiefly from old mines. The third stamp at the new mill of the Quincy has just started up, and the mill will add 1500 tons of rock to the daily crushing capacity of the mine, and it is this mine that will make the greatest gain for the year.

There has been a tremendous increase in the new districts of the copper country. Regular trains are now running to the Baltic, Champion and Trimountain mines, though the first of them was not opened till less than three years ago, and the others are only about one year old. There are 1000 men at these mining locations now. The mills and stacks of the Franklin and Arcadian cover a frontage of 2 miles along Grosse Point, where three years ago there was nothing but woods. At the Arcadian mine location there are more than 1000 people, though the location was a deserted village two years ago.

D. E. W.

The Baker Double Seated Hot Blast Valve.

What is the best type of hot blast valve for blast furnace use is a question that would receive a variety of answers if addressed to different furnace managers. The valve, however, which is most widely used is of the mushroom type. Formerly the practice was to make these valves of cast iron and the stem of the same material, with the end designed to be secured to the valve provided with a flange. This flange was secured to the valve with studs or T-headed bolts. An improvement in this practice is the making of the stems of double extra heavy iron or steel pipe machined the full length and screwed into the valve body. A stem which has been introduced lately is made of seamless drawn brass tubing, which, to secure a strong, tight connection, is expanded into the valve body, a hole being left in the under side of the valve for the insertion of an expander, and when the valve is finished is closed with a plug. The cast iron stem is unsatisfactory, owing to its weakness and the liability of leaks at the joint made with the valve. Such leaks are often hard to detect and extremely expensive in fuel consumption in the furnace. The iron pipe stem screwed into the valve body is amply strong and holds perfectly tight, but it is not operated as easily as the brass stem, on account of being rougher on the surface, and causing more friction with the packing.

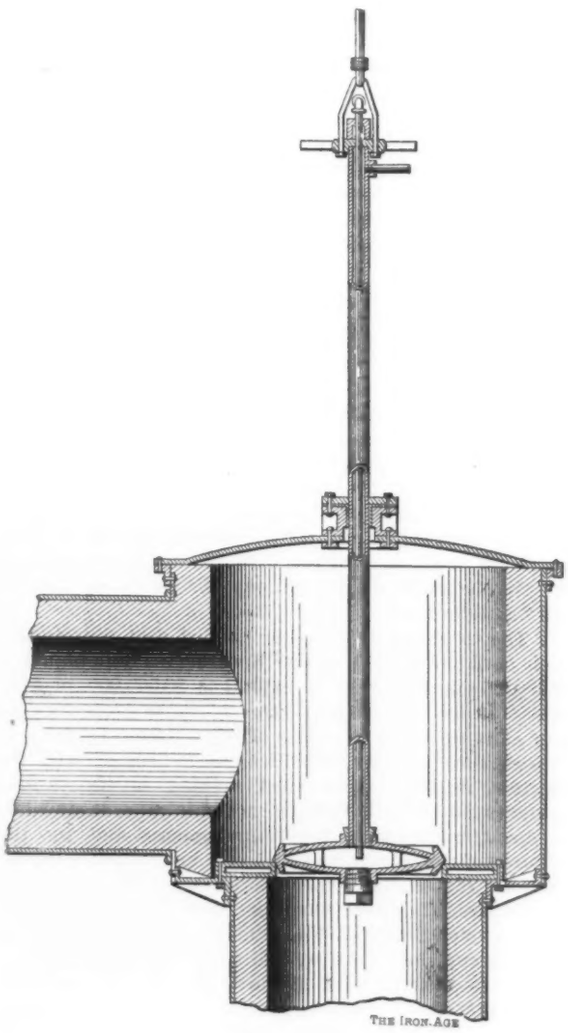


Fig. 1.—Vertical Sectional Elevation.

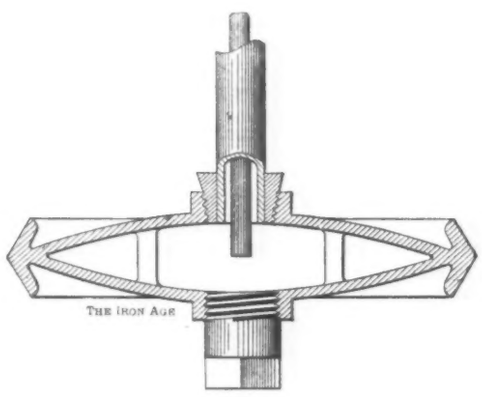


Fig. 2.—Enlarged View of Valve Body.

DOUBLE SEATED HOT BLAST VALVE

The brass stems are non-corrosive, very smooth, and can be readily operated with packing tight enough to stop the blast leaking, but the necessity of cutting these stems out of the valves to remove them makes their cost so high as to be nearly prohibitive.

The fact that the first mushroom valves used in stoves were of cast iron is probably the reason why some other form of valve was designed, for the valves of this metal very frequently cracked and caused the furnaceman a great deal of trouble. In spite of this objection there is no type of water cooled valve for hot blast stoves that gives less trouble, is cheaper and tighter than the old mushroom pattern.

Adhering to this general design, and using instead

of cast iron a bronze of special composition, a valve is obtained that will not crack, and at the same time is sufficiently hard to prevent being readily cut away in case of there being a slight break between valve and seat.

With proper treatment these valves will remain practically tight for two years, but to obtain this result a new seat should be put in with the valve. The valve and seat, in addition to being machined to make a tight joint, should be ground with emery to a perfect fit before being put in service. This extra trouble will be amply repaid by higher efficiency of blowing engines, better results from the stoves, besides very materially increasing the life of valve and seat. But if there is only a slight leak between valve and seat the hot blast will soon cut away valve and seat, making necessary a speedy renewal of both of them.

The valve illustrated herewith is made of bronze, but has two seats or surfaces designed to make contact with the seat. It is shown here in connection with a very good form of seat; but, of course, it can as well be used with the Berger or any other form of seat adapted for the regular mushroom valve. With the double seated valve, when one side is badly cut the valve stem is removed and screwed into the other side, and the valve is then equal to a new one of the old type. In order to save the expense of a new brass stem each time it is removed from the valve, the stem is expanded into a wrought iron or steel bushing, which is screwed into the valve body.

To reverse this valve the bushing and stem is unscrewed from the valve by means of a heavy long handled cut wrench, which engages the square part of the bushing. The thread in this bushing should be coated with oil and graphite each time it is inserted in the valve, also the plug which closes the opening on the opposite side.

It has been found that a strong wooden clamp to hold the valve at its periphery is very necessary during this operation. With these arrangements the life of the brass valve stem is indefinite, and therefore the advantages outweigh the slightly higher first cost. This improvement in hot blast valve and stem attachment forms part of letters patent issued to David Baker of Chicago, and the valves are manufactured by Smeeths Copper & Bronze Company of the same city.

The Pennsylvania Steel Company.

The following are the features of the plan proposed for providing the Pennsylvania Steel Company with additional capital and for the retirement of a portion of their bonded debt:

It is proposed to form a corporation under the name of Pennsylvania Steel Company, under the general corporation laws of Pennsylvania or New Jersey, with an authorized capital of $25,000,000 in 7 per cent. non-cumulative preferred shares and $25,000,000 in common shares, to acquire or control by conveyance, by transfer of shares, or otherwise, all the property now owned by the Pennsylvania and Maryland Steel Companies.

It is proposed to issue presently $16,500,000 preferred shares and $10,750,000 common shares, for the issue of which the properties above mentioned will be conveyed or the control thereof transferred to the new company, subject to the existing bonded debt, and $9,000,000 in cash will be paid into the treasury of the new company.

The remaining shares—viz., $8,500,000 of preferred stock and $14,250,000 on common stock—will remain in the treasury, available for the future requirements of the company.

The $16,500,000 preferred shares and $10,750,000 common shares now issued will be used as follows:

"The shareholders of the Pennsylvania Steel Company are invited to deposit their shares with the Girard Trust Company for conversion upon the following basis:

"The present preferred shares ($1,500,000) will receive new preferred shares, 100 per cent. ($1,500,000), and new common shares, 50 per cent. ($750,000).

"The present common shares ($5,000,000) will receive new preferred shares, 100 per cent. ($5,000,000).

"If this plan is carried into effect and the shares of present preferred and common stock of the Pennsylvania Steel Company are deposited for conversion as above stated into shares of the new company, then out of the $16,500,000 preferred shares and $10,750,000 common shares issued as hereinbefore stated, $10,000,000 preferred shares and $10,000,000 common shares will be sold to Drexel & Co., Dick Brothers & Co. and Edward B. Smith & Co. for $9,000,000 in cash. Out of the $9,000,000 thus provided, $2,000,000 will be appropriated for the retirement of so much of the present bonded debt as can be obtained at satisfactory prices. If said bonds cannot be purchased at a satisfactory price, the money appropriated for the purchase of the same, at the discretion of the bankers, may be applied to the general uses of the company.

"Pending the issue of stock of the new company, the trustee will issue to depositing shareholders its negotiable receipts. In case sufficient shares are not deposited with the trustee on or before March 15, 1901, to justify, in the opinion of the trustee, the further prosecution of the business, the trustee will return to each depositing shareholder or his transferee, upon the return of the negotiable receipt issued by the trustee, the number of shares of the Pennsylvania Steel Company stock represented by said receipt."

The plan is accompanied by a letter from E. C. Fulton, the president of the Pennsylvania Steel Company, from which we quote the following:

"The volume of your business has increased from sales of $6,873,590.75 in the year 1896, to $19,693,848.79 in 1900.

"Your capitalization remains the same, and in the opinion of your directors is wholly inadequate to handle your present transactions with advantage, and is an absolute barier to future growth. Both your share capital and your bonded debt are comparatively small and do not represent either the present intrinsic value of your plants or their earning capacity as income producers for the future, with its outlook for increased foreign and domestic trade.

"The total amount of your bonded debt outstanding upon both your Steelton and Sparrow's Point plants is $6,500,000, and your share capital is $6,500,000, or $13,000,000 in all. The actual value of these properties, as they exist to-day, is in excess of $20,000,000. In order to properly develop their capacities and to keep up with the progress in the art of steel making in its various branches, and of shipbuilding, not only must large sums be spent immediately for improvements and for the acquirement of cheap fuel and ore, but means must be provided for similar expenditures, when necessary, in the future. The steel business never stands still. No plant is ever finished. No owners, whether individual or corporate, can afford to fold their hands and be satisfied with their position in the trade. The competition is constant, growing and strenuous. Only the companies who have abundant resources can remain in profitable existence.

"It is impossible for your company to continue in business with profit to its owners unless ample capital is now contributed in cash, and additional stock held in the treasury unissued but available for use when required in the future.

"The profits of the past two years have been large, and, except a small sum paid in dividends upon the prefered stock, every dollar of them remains in active use in your business. The year of 1901 opens auspiciously, and in some departments the company have already sufficient orders to keep them running the entire year. Raw materials cannot be bought to advantage on credit; their manufacture, shipment and delivery consume time, during which period very large sums are necessarily invested."

We understand that the sums which will become available for strengthening the position of the company are to be applied to the purchase of ore and coal property, to the building of by-product coke ovens, to extensive additions to the open hearth, frog and switch and bridge departments at Steelton, Pa., and to the shipbuilding and rolling mill departments at Sparrow's Point, Md.

Awards on Machinery for the Puget Sound Navy Yard.

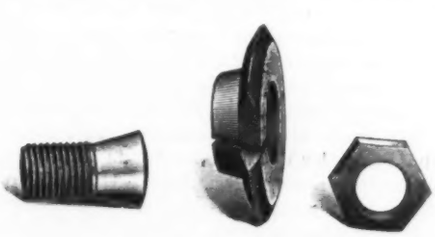
On the machinery for the Puget Sound Navy Yard, bids for which were received at the Navy Department on November 13, awards have been made as follows:

Class 1. One motor driven iron planer—Dietrick & Harvey Machine Company, Baltimore, Md., $5193.
Class 2. One motor driven double angle shear—Niles Tool Works Company, Hamilton, Ohio, $2810.
Class 3. Electric traveling crane—Pawling & Harnischfeger, Milwaukee, Wis., $3100.
Class 4. One direct connected generating set—General Electric Company, Schenectady, $3584.
Class 5. Switchboard and instruments—General Electric Company, $410.
Class 6. Engine lathe—Niles Tool Works Company, $2700.
Class 7. Engine lathe—Henshaw, Buckley & Co., San Francisco, Cal., $545.
Class 8. Boring and drilling machine—Niles Tool Works Company, $2045.
Class 9. Drilling machine—Niles Tool Works Company, $770.
Class 10. Air Compressor—Henshaw, Buckley & Co., $1195.
Class 11. Steam hammer—Henshaw, Buckley & Co., $2777.
Class 12. Sewing machine—Henshaw, Buckley & Co., $995.
Class 13. Wood working machine—Henshaw, Buckley & Co., $360.
Class 15. Cabinet makers' double saw—Henshaw, Buckley & Co., $270.
Class 16. Dovetailing machine—Henshaw, Buckley & Co., $252.
Class 17. Band saw—Henshaw, Buckley & Co., $367.
Class 18. Emery tool grinder—U. Baird Machinery Company, Pittsburgh, $328.
Class 19. Sand papering machine—Henshaw, Buckley & Co., $132.
Class 20. Twist drill grinder—Park & Lacy Company, San Francisco, $72.
Class 21. One universal grinding machine—Park & Lacy Company, $418.

Class 6 of the bids opened at the Navy Department on January 2, was awarded to the U. Baird Machinery Company of Pittsburgh. The item called for was a combined punch and shear, and the price was $1625. It is to be installed at the Mare Island Navy Yard.

The Hugh Hill Threading Tool.

The Hill Tool Company, Anderson, Ind., are making the threading tool here illustrated. The holder is drop forged of steel. The cutter is made of tool steel, is cir-



Parts of the Cutter.

THE HUGH HILL THREADING TOOL.

cular in form and is ground accurately after being tempered. The cutting lip is formed tangentially, thus giving proper clearance and permitting right and left threads to be cut with one setting of the tool. The cutter is held in a conical seat in the holder by a taper bolt, which holds the cutter firmly and permits as slight an adjustment as may be desired The tool cuts V-shaped threads, but the company are considering the matter of furnishing United States standard cutters.

The Buffalo, Rochester & Pittsburgh Coal & Iron Company have purchased about 4000 acres of coal land in White and Center Townships, Indiana County, Pa. The land is included in 37 farms, all lying near the town of Indiana. The price paid to the land owners was $113,563.56. Operations are to be started at once to develop mines in the territory. The holdings of coal lands by the company in that section aggregate about 10,000 acres.

Notes from Great Britain.

Prices Still Falling.

LONDON, January 5, 1901.—The Midland iron market is still falling and still the buyers are holding off. On January 1, without waiting for the usual Midland Association meeting, four of the big iron manufacturers announced a further reduction in the price of marked bars of $5 per ton. The trade in marked bars is, however, more satisfactory than in common bars, but the orders coming in are small. It is hoped that this last reduction will stimulate trade, but nobody is very hopeful. As far as common bars are concerned it seems impossible to reduce prices further, inasmuch as it is claimed by the makers that they cannot make at less than $40 except in one or two very exceptional instances where new contracts for fuel and raw material have been more favorable. Notwithstanding this makers of common bars are selling at $37.50. There is more than a suspicion that in all the other lines, such as black sheets, hoops, steel billets of all kinds and pig iron, contracts for a short term have been made below the association prices. In the steel market the announcement of an advance in American steel has created a firmer feeling among steel manufacturers.

German competition is being felt, as German bars for tin plate work are now being offered at cutthroat prices. But both in the iron and steel markets buyers are holding off with provoking consistency. Two or three more firms have issued circulars to their creditors so that altogether the new year has not opened auspiciously.

A New Consolidation.

It is announced that arrangements have now been completed between the Moss Bay Iron & Steel Company of Workington and the Harrington Iron Works, near Whitehaven, together with the collieries and iron mines owned by Sir John Bain & Co. of Whitehaven, and in the Cleator and Egremont districts. The Moss Bay Iron & Steel Company have acquired all the other concerns, so that this is a new combine on quite a large scale, but the amount of the capital is not yet announced.

$10,000,000 Capital.

The growth of large concerns interested in supplying electrical power is still manifest. The latest is a bill for incorporating and inferring powers on the South Yorkshire Electric Power Company to supply electrical energy in bulk in the districts of Halifax, Huddersfield, Wakefield, Dewsbury, Badley, Morley, Brighouse, Keighley, Doncaster, Barnsley, Rotherham and Todmorden. The capital of the new concerns is fixed at $10,000,000, with the right to raise further moneys by the exercise of borrowing powers to an extent not exceeding one-third of the issued capital. The gentlemen at the back of this new enterprise are Sir Richard Mottram, Sir William Agnew, H. A. Earle and W. P. J. Fawens. It looks as if before long the whole of the United Kingdom will be parceled out among large electrical undertakings of this character, so that the price of electric power should soon be much cheaper than it is now. Provision is made in the new company for limiting the dividends to 8 per cent. per annum, with an arrangement for reducing the standard price of 5 cents per unit according to the amount of profit earned.

Non-Illuminating Gas for Motive Power.

A company with a capital of $5,000,000, with authority to issue debentures to the further extent of one-third of that amount, has been formed for the manufacture and sale on a large scale of non-illuminating gas for motive power, heating and other purposes. The area of supply extends over South Staffordshire and East Worcestershire and works are to be erected in five of the chief towns in the area named for the production of the gas. It is to be sold at 6 to 8 cents per 1000 cubic feet, according to the quantity taken. There is also to be maximum rates except when the price of slack coal rises

above $1.50 per ton, delivered, at the works. In that event the charge for gas may be advanced in the proportion of 1 cent per 1000 feet for every 25 cents per ton over the $1.50. Parliamentary powers are sought for compulsory powers to purchase the requisite land. If this company had been in existence two years ago it would have made a stupendous fortune, but now that prices are coming down and slackness of trade is upon us its chances are necessarily not so rosy.

Does this Explain Atbara?

A story is being told of the commander-in-chief in South Africa, which may possibly afford a clew to the reason why Americans obtained contracts for the Atbara Bridge in Egypt and elsewhere. Colonel Girouard, the Canadian engineer who recently visited America with the view of examining the facilities of American makers of bridges, is now serving in South Africa. He was recently informed by Lord Kitchener that a bridge which had been blown up by the Boers must be sufficiently repaired for the troops to pass over in five days. "I will see the structure, sir," said the colonel, and after his inspection he informed Lord Kitchener that he would require ten days. "I said five days, sir," replied Lord Kitchener, "and our troops will then march over the bridge." Colonel Girouard rose to the occasion by working night and day, and in telling the story remarked that it does not to do disobey Lord Kitchener. One can easily imagine that a precisely similar conversation took place betwen Lord Kitchener and Girouard with regard to the Atbara Bridge, and it goes without saying that if the American makers came up to time the contract would naturally have gone to America. Meantime the "Statist" is fully alive to the situation, remarking that unless our manufacturers are prepared to lose foreign markets they must rouse themselves without delay.

Points in Favor of British Machinery.

An experienced British engineer, Gilbert Little, has been taking up the cudgels on the British side in the perennial dispute as to whether British or American machinery is, on the whole, the best. He makes some remarks which are worth the attention of American engineers. In the matter of automatic handling of grain and coal, Gilbert Little says that as we do not export grain the ingenuity of the British enginer or millwright has never been required to design grain loading machinery like the huge elevators of Chicago, but unloading machinery at our seaports is certainly not inferior in self acting efficiency and economy to American ship discharging appliances; and as regards automatic conveying and elevating machinery in British and Irish mills used in the manufacture of flour, meal and provender, the British methods were formerly far in advance, and the balance of efficiency is still on the side of the British makers. He further contends that so far as labor saving machinery in collieries, gas works and iron and steel works goes, the British engineers are still holding their own. So far as collieries and gas works are concerned the British superiority is marked and decisive. He says on this point: "Our superiority in labor saving machinery in gas works over America is particularly marked, and most frankly admitted by managers of American gas works, many of whom have visited England recently to study the improvements. It can hardly be known that within the last few years a novel system of setting retorts has been adopted at numerous gas works in England with such success as relieves the stokers from the severe and hot labor of shoveling the coal into the retorts, and at the same time reduces the cost of carbonizing coal in gas works over 50 per cent. In this new method the retorts are set at an angle of about 33 degrees from the horizontal, and the law of gravitation utilized automatically to trim the charge of coal in an even layer on the retort floor. In this almost laborless system of charging gas retorts the coal, as it is brought to the works by wagon, barge or ship, is lifted by a bucket elevator to a coal hopper fixed over the bench of retorts, and, along the bottom of this, hopper measures on the "shot pouch" principle with cut offs to determine the charge to each retort are arranged, so that by pulling a lever to operate the cut offs the charge of coal in the measure falls through a shoot down and all over the floor of the retort. A distinguished American engineer, who recently inspected this "shot pouch" method of charging inclined retorts in England, wrote: "This system leaves me in no doubt about having established the right to be preferred over all other methods of charging gas retorts," and Mr. Herring, the engineer-in-chief of the Edinburgh & Leith Gas Works, has stated: "Any system but the 'shot pouch' is only half way automatic in a retort house." The "shot pouch" method of putting the charge of coal into retorts set at an incline of 33 degrees has reduced the cost per ton of coal carbonized from 3 shillings to 1 shilling 3 pence. The cost in America is 4 to 5 shillings per ton. I anticipate, however, a wide adoption of the "shot pouch" system in America. S. G. H.

The Asbestos Situation.

An extraordinary increase in the cost of asbestos is now facing furnacemen, steam fitters, steel range makers and other users of this material. The price of the crude mineral rules very materially higher than it did a year ago, and it is still on the up grade, with no prospect of relief for some time to come, according to those most closely in touch with the trade. The reason for the recent radical advance in asbestos is twofold: scarcity of supply and an extraordinarily heavy demand. A fire which partially destroyed, and wholly crippled for a time, the largest producing mine in Canada in the early part of 1900 cut short last year's production of asbestos several thousand tons. This mine was controlled by the biggest concern manufacturing asbestos goods in the United States, who immediately took options on the products of other Canadian mines, with the result that their American competitors as well as the European asbestos manufacturers were unable to secure as much of the crude material as the growing demand for manufactured goods called for. This caused a scarcity which has sent prices soaring upward 100 per cent. or more. Indeed, prices of crude asbestos are now really nominal, so small is the available supply. Some users are said to be paying from three to four times as much for their material as they did 12 months ago. Moreover, there is no prospect of any increase in the supply until after navigation opens up in Canada next spring. Most of the asbestos mines in the Dominion are snowed up in the winter and are unworkable owing to frost. Consequently there is every likelihood of still higher prices being developed during the first half of this year. Meanwhile the demand for asbestos is expanding by leaps and bounds, as it finds its way into new fields of usefulness. It is estimated that from 40 to 50 per cent. more asbestos was manufactured into goods last year than in 1899. The asbestos manufacturers of Germany, France and England rely very largely for their supplies upon Canada, as the asbestos produced in Europe—mainly in Italy—is unsuitable for manufacturing owing to its brittleness and lack of strength, whereas the Canadian product is of much tougher fiber. Consequently they have been quick to snap up any stocks they could get hold of on this side of the water at almost any price. The present situation of the mineral is one of great strength, and it is likely to be a dear purchase for some time to come.

The Western Society of Engineers.—The Western Society of Engineers, Chicago, have elected the following list of officers for the ensuing year: President, Octave Chanute; first vice-president, William H. Finley; second vice-president, B. E. Grant; secretary, Nelson L. Litten; treasurer, Ralph Modjeski; trustees, J. J. Reynolds, August Ziesing and Bion J. Arnold. The incoming president, Octave Chanute, is one of the oldest engineers in the United States, he having been a rodman when the road bed for the Hudson River Railroad was laid out in the early forties. For many years he was the chief engineer of the Erie Railroad. The annual banquet of the society was held in the Grand Pacific Hotel on the evening of the 8th inst. The speeches were upon the general subject of the improvement of the Chicago River.

German Steel Works.

The fourth edition of that excellent manual on the iron trade published by the Verein Deutscher Eisenhuettenleute contains a full list of the German Bessemer and open hearth steel works, which we reproduce herewith. The acid plants are marked with an asterisk:

Bessemer Steel Works.

Company.	Converters. Number.	Capacity. Tons.
WESTPHALIA AND RHENISH PROVINCE:		
Aachener Huetten Act. V., Rothe Erde	3	20
Bochumer V. f. B. B. u. G., Bochum	*3 3	*8 6
Gewerk. Deutscher Kaiser, Bruckhausen	4	15
Eisen u. St. Hoesch, Dortmund	3	11
Gesell. f. Stahlindustrie, Bochum	*2	*8½
Gutehoffnunghuette, Oerhausen	4	15
Hasper E. & S. W., Haspe	3	6
Hoerder B. u. H. V., Hoerde	4	18
Friedr. Krupp, Essen	*15	*6
A. G. Phœnix, Laar bei Ruhrort	3	12½
Rhein. Stahlwerke, Meiderich, bei Ruhrort	4	8
Union, Dortmund	4	18
LORRAINE:		
L. H. Ver. Aumetz-Friede, Kneuttingen	4	20
Rombacher Huetten Werke, Rombach	4	18
De Wendel & Co., Hayingen	6	12
De Wendel & Co., Gros Moyeuvre	3	12
SAAR DISTRICT:		
Burbacher Huette, Burbach	4	11
Dillinger Huetten Werke, Dillingen	3	15
Eisen Werk Kraemer, St. Ingbert	2	15
Roechling'sche E. u. St. W., Voelklingen	4	15
Gebr. Stumm, Neunkirchen	7	11½
LUXEMBURG:		
E. H. A. V. Duedelingen, Duedelingen	6	10
A. G. f. E. u. K. I., Differdingen, Dannenbaum, Differdingen	3	20
SOUTHERN GERMANY:		
Els. W. G. Maximilians-Huette, Rosenberg, Oberpfalz	3	5½
HANOVER:		
Georgs-Marien B. u. H. V., Osnabrueck	*2	*7½
Peiner Walz Werk, Peine	4	15
SAXONY:		
Els. W. G. Maximilians-Huette, Zwickau	3	15
Sachs. Gussstahl-Fabrik Doehlen bei Deuben, Brz. Dresden	*2	*6
UPPER SILESIA:		
O. E. B. A. G. Friedens Huette, Friedenshuette	4	12
Huldschinsky'sche Werke, Gleiwitz	*1 1	*8 8
Koenigs-u. Laura-Huette, Koenigshuette	*1 2	*8 8

*Acid Bessemer steel.

The following is a list of the open hearth steel plants, with the number and capacity of the furnaces. The letter *c* indicates that the works also produce steel castings:

Open Hearth Steel Plants.

Company.	Number.	Capacity. Tons.
Aachener H. A. V., Rothe Erde	c3	25
Annener G. S. W., Annen in Westfalen	*c2	*15
B. u. H. A. G. Friedrichshuette, Wehbach	3	20
G. Bergenthal & Co., Grevenbrueck	2	16
Bergische St. I., Remscheid	2 c3	10 7
Bochumer Verein, Bochum	c7	25
Bremer Huette, Geisweid	2	25
Deutscher Kaiser, Bruckhausen	*1 7	*15 15
Duesseldorfer R. u. E. W., Duesseldorf-Oberbilk	2 2	20 25
Duisburger E. u. S. W., Duisburg	4	20
Eicken & Co., Hagen-Eckesey	4	12
E. I. Menden u. Schwerte, Schwerte I	5	15
E. u. S. W. Hoesch, Dortmund	c4	18
G. S. W. Witten, Witten	2 1 3 1 1	18 25 25 15 25
Geisweider E. W., Geisweid	2	12
Gewerkschaft Glueckauf, Dahlhausen	c2	15
Grillo, Funke & Co., Schalke	3 2	10 16
Gutehoffnungshuette, Oberhausen	6 c1	15 4
Hagener Guss. W., Hagen	*1 c1	*7 10
Hahn'sche Werke, Grossenbaum	2	20
Peter Harkort & Sohn, Wetter	4	10
Hoerder B. u. H. V., Hoerde	*1 7 c2	*18 18 7
Huestener Gewerkschaft, Huesten	c3	15
Friedrich Krupp, Essen	*9 c18	*10 21
Oberbilker Stahlwerk, Duesseldorf-Oberbilk	c3	15
A. G. Phœnix, Laar bei Ruhrort	*1 1 4 4	*12 12 20 14
A. G. Phœnix, Eschweiler	4	14
Rasselsteiner E. W. G., Rasselstein bei Neuwied	2	10
Rheinische Stahlwerke, Meiderich bei Ruhrort	4	10
Rheinische M. W. u. M. F., Duesseldorf-Rath	*1 3	*9 15
Thyssen & Co., Muelheim-a.-d.-Ruhr	2 5	20 12
Union, A. G. f. B. E. u. S. I., Dortmund	4 c1	25 8
Westf. Stahlwerke, Bochum	5 2	18½ 22
Gebr. v. d. Zypen, Koln-Deutz	*3 3 2	*13 13 25
ALSACE:		
De Dietrich & Co., Niederbronn	*1	*3
LORRAINE:		
L. H. A. V. Aumetz-Friede, Kneuttingen	*1 1	*15 15
SAAR DISTRICT:		
Burbacher Huette, Burbach	3	15
Dillinger Huett. W., Dillingen	*1 3 2 1	*15 15 25 30
Gebr. Stumm, Neunkirchen	1	12
Ph. Weber, Hostenbach	3	15
SOUTHERN GERMANY:		
E. G. Maximilians-Huette Rosenberg, Oberfalz.	2	15
HANOVER:		
Georgs-Marien Bu. H. V., Osnabrueck	3	20
Stahl u. Walzwerk, Rendsburg	2	25
SAXONY:		
Koenigin Marien Huette, Cainsdorf	3	10
A. G. Lauchhammer Werke, Riesa	4	13
Saechs. Guss. Stahl Fabrik, Doehlen bei Deuben, Bez. Dresden	*1 1 3	*8 12 17
UPPER SILESIA:		
Baildon Huette, Kattowitz	3 1	15 20
E. u. S. W. Bethlen-Falva, Schwientochlowitz	2	15
Bismarck Huette, Schwientochlowitz	1 3	20 15
Borsig, Borsigwerk	4 4	15 20
O. S. E. B. A. G. Friedens Huette, Friedenshuette	2	17
Hubertus Huette, Oberlagiewnik	2	20
Huldschinsky'sche Werke, Gleiwitz	2 1	15 20
Koenigs-u. Laura Huette, Koenigshuette	4 1	12 10

*Acid open hearth steel.
c Make castings also.

In addition to the list of open hearth plants given there are a number of plants, large and small, producing open hearth steel for the manufacture of castings exclusively.

A New Pneumatic Yoke Riveter.

The Philadelphia Pneumatic Tool Company of Philadelphia have designed a pneumatic yoke riveter adapted to a wide range of work on tanks, bridges, ship frames, structural work, &c. It will drive rivets of any size up to 1⅛ inch and may be used with a depth of yoke varying from 10 inches to 10 feet or more. This riveter presents a number of improvements in design. It is positive in its action, no dependence being placed on springs or other similar devices. The entire action of the machine is under the control of the operator, by means of one throttle lever. The first movement of the lever causes the hammer cylinder to move out against the rivet, the next movement starts the hammer to work on the rivet. When the rivet head is completed a reverse movement of the lever causes the hammer to stop working and the cylinder to withdraw into the casing by air pressure. The advantage of this arrangement is that the cylinder may be moved out until the button set comes in contact with the hot rivet and is held there while any necessary adjustments are made before starting the hammer to work. This will, in many cases, prevent spoiling the rivet. The withdrawal of the cylinder into its casing by means of air pressure enables the operator to use the machine in any position with the certainty that the cylinder will positively remain inside the casing until he is ready to drive the next rivet. These points will be appreciated by those who have used other types of yoke riveters. The smallest yokes are usually made of flat bar iron bent around to suit; medium size yokes up to 48 inches deep are made of extra heavy wrought iron pipe, while those of greater depth are made of steel plates braced and stiffened with angle iron. The machine is light in weight and simple in construction, having but three moving parts. With each machine are furnished two riveter dies and one holder-on die with the necessary collars for adjusting the gap for different lengths of rivets. The machine requires 25 cubic feet of free air per minute for its operation and ample facilities are provided for thoroughly oiling all parts. On field work, erecting large water, gas and oil tanks, 80 to 100 rivets per hour have been driven.

The new wire rod mill at Cortland, N. Y., is to be started at an early date.

Invalid Insurance in Germany.

Ambassador White sends from Berlin, December 10, 1900, translation of a note verbale from the German Foreign Office giving the more important provisions of the law relating to invalid insurance now in force, as follows:

1. According to the "disability and old age insurance law" of January 1, 1900 (Imperial Law Sheet, 1899, page 463), the following persons are insured after the completion of their sixteenth year:

1. As heretofore, servants who are working for wages;

2. Deviating from the law heretofore in force:

a. Private teachers and tutors—for instance, male and female private teachers and male and female private tutors (public teachers do not pay any insurance for giving additional private lessons);

b. Other employees, whose main occupation is that of a servant.

Under the group "other employees," those are mainly to be figured who are employed in public or private institutions or business establishments of every description, as well as officials of the medium class; in the first case, therefore, the actual office personnel (clerks, registrars, calculators); in the latter, private secretaries, companions, ladies in waiting, &c.

The following are also to be regarded as "wages:" Dwelling, clothing, board, fuel, &c. An occupation in return for which "board and lodging" is only granted to such an extent as would suffice to cover the necessary demands of living to the employed does not necessitate insurance.

Stress is laid on the fact that every temporary employment makes the insurance compulsory, in so far as the Bundesrath does not make an exception to this, according to the regulation of December 27, 1899. According to this regulation, compulsory insurance for temporary employment does not, as a rule, exist when performed by persons who do not follow the occupation of laborers and receive wages therefor, and who only do this occasionally, when additional help is required, or who perform the work at regular intervals, but only in addition to their other work and against small pay, which for the time of employment would not suffice to pay for their support, and which would not be in comparison with the amount of insurance which would have to be paid for the time.

2. The insurance of all insured persons in Berlin is effected at the "Landes-Versicherungsanstalt," Berlin C, which has its offices at Kloster Strasse, 41, while in the suburbs of Berlin it is effected at the "Landes-Versicherungsanstalt Brandenburg," Mathäikirch Strasse, 19. A special announcement of arrival and departure with the insurance institution need not be made. The said persons are insured in accordance with the law for "disability and old age" from January 1, 1891, and those who are now brought under the insurance law are to be insured from January 1, 1900.

3. The paying of the insurance contributions is effected by pasting stamps on a receipt card of the insured. The contributions are to be paid for every week in which the person has been employed under the conditions necessitating insurance for workingmen or servants. The week for contributions begins on Monday of each calendar week. The contributions or stamps are to be paid by the employers; they are, however, entitled to deduct one-half of the same from the servants' wages on their payment. The stamps are to be pasted on the receipt card by the employer.

The stamps can be bought at all post offices, and also at those shops where the sale of stamps is indicated by signs.

While stamps were formerly sold covering the period for one week only, they may now be purchased for a period of 2 and of 13 weeks (the latter to cover a period of three months).

4. Contributions are made each pay day (monthly, quarterly, &c.), according to the date when the wages are paid to the servants—monthly, quarterly, &c.—and in the following manner: The employer pastes stamps in continuous succession on the receipt card of the employed for the amount of the contribution which is to be paid for for the period of the employment—that is to say, for the number of weeks for which wages are to be paid to the employee, and also with reference to the wage class. Stamps covering a period of more than one week must be canceled by the employer; stamps for one week may be canceled. The cancellation can only be effected by writing plainly on each stamp or stamping in figures the date when the cancellation took place—for instance, for December 15, 1900, "15, 12, 00." Ink or similar material is to be used for the cancellation. Other marks for canceling are not permitted.

The ultimate payment of the contribution, after it has become due, is not permissible after two years, and, if the amount to be paid has been fixed too late on account of a dispute regarding the amount to be paid or for other reasons not caused by the participants, not after four years.

5. The number of the wage class is decided by the amount of the annual earnings of the insured, whether payment in cash or payment in kind. The law has fixed five wage classes, as follows:

To class 1 belong all persons under obligation to be insured, earning annually not more than 350 marks ($83.30).

Class 2, those earning annually from 350 to 550 marks ($83.30 to $130.90).

Class 3, those earning annually from 550 to 850 marks ($130.90 to $202.30).

Class 4, those earning annually from 850 to 1150 marks ($202.30 to $273.70).

Class 5, those earning annually more than 1150 marks ($273.70).

For deciding the question to which wage class the insured belongs—aside from the exceptions herein specified—the actual amount earned is not final. Rather, as the basis of computation, in the case of insured not belonging, as will generally be the case, to the "sickness fund," the annual wages, pursuant to the legal provisions of the "sickness" insurance law of April 10, 1892 (Imperial Law Sheet, page 417), is assumed to be 300 times the amount fixed by the superior administrative authority of the place of employment as the customary pay in that locality of the ordinary laboring man or working woman by the day.

According to this the annual wage is fixed at 300 × 2.70 = 810 marks ($192.78) for males for Berlin; these persons, therefore, belong to the third wage class. The annual wages of females to 300 × 1.50 = 450 marks ($107.10); they, therefore, belong to the second wage class.

Teachers and tutors (female teachers and tutors) belong to the fourth wage class at least, but whenever it is shown that they have an annual income of more than 1150 marks ($273.70), to the fifth wage class.

In case a fixed amount in cash payment is agreed upon for weeks, months, or years, and if the amount is higher than that given above as the average payment, this payment is to be taken as a basis.

Employers and servants can, however, agree that the insurance shall be made in a higher wage class than that which would necessarily follow from the amount of the annual wages—so that female servants can be insured in the third, fourth or fifth and male servants in the fourth or fifth wage class. In case such an agreement is arrived at, the employer must pay one-half of the entire amount. The insured may for himself claim the insurance of the higher wage class. If this is the case, however, the amount to be paid by the employer is not to be calculated according to the higher wage class, but according to the wage class fixed by law; the remaining amount is to be paid by the insured.

6. For each wage class different stamps will be provided, and, as already stated, for 1, 2, or 13 weeks. Their price will be:

Wage class.	—One week.— Pfennigs		—Two weeks.— Pfennigs.		—Thirteen weeks.— Pfennigs.	
1.....	14	$0.03	28	$0.06	182	$0.43
2.....	20	.047	40	.094	260	.618
3.....	24	.057	48	.114	312	.74
4.....	30	.071	60	.142	390	.928
5.....	36	.085	72	.171	468	1.113

7. The insured has to provide himself with the receipt card for pasting on the stamps. He may be held to do this by the police. These will be furnished without fees or other cost by the chief of that police circuit in which the employer resides.

In case the servant should fail to procure the receipt card the employer himself may request its issue for the servant, and this course is recommended in order to avoid the consequences of not being in possession of the same. To procure the issue of the first receipt card for a servant the production of a servant book (Dienstbuch) before the proper authorities will suffice. Other proof will be sufficient for proving the identity of persons requesting the issue of a receipt card—for instance, birth and baptismal certificates.

The receipt card must, in order to remain valid, be presented at the office given above in order to have it exchanged for another within two years from the date of issue. This exchange must also be effected by the insured.

American Tin Plate Bars in Wales.

The position of the steel makers in the South Wales district who manufacture bars for the local tin plate industry appears to be more and more embarrassing. American bars, for some time past, have been imported at $7.50 to $8.75 a ton cheaper than bars can be made in South Wales, and now the German manufacturers have entered the field in competition with American bar makers and are sending around circulars to the Welsh tin plate makers offering steel bars at about $1.25 a ton below the quotations of the local steel makers. In face of this opposition a number of the furnaces in the Swansea district have suspended work and by last accounts there were only 12 in operation. At the Albion Steel Works, Briton Ferry, contracts are from day to day. The steel makers have agreed to a reduction of 5 per cent. in wages during January and another 5 per cent. later, but these concessions are regarded as quite inadequate to meet the exigencies of the trade. Meanwhile the price of Welsh tin plates has fallen to such an extent that few of the tin plate manufacturers, it is said, can cover the cost of production, even if they use American bars. It is suggested by the *Steel and Iron Trades Review* that the best policy of the Welsh bar makers would be to have a fixed price for their product yielding a small profit, and to shut up their works if they cannot get it. This, it is urged, would soon raise and stiffen the prices of tin plates, and those tin plate works which have entered into large contracts for American bars and also contracts for tin plates "would reap the due reward of their unpatriotic action." It is stated that no relief has come to the Welsh tin plate makers by the introduction of American bars, but their use has enabled the prices of tin plate to be knocked down to a ruinous extent. It is reported that altogether about 50,000 tons of American bars were landed last year in the Bristol Channel.

The Featherstone Foundry & Machine Company.—The Featherstone Foundry & Machine Company, 348 to 358 North Halsted street, Chicago, report their business very good, and the prospects for 1901 of the very best. The plant is worked to its utmost capacity, and the company have all the dredge work that can be handled for the next six months. In addition to this work, they are rapidly filling up with orders for ice and refrigerating machinery, and now have a number of large machines in process of construction. The increase in trade has forced them to equip their machine shop with new tools, some of which are among the finest west of Pittsburgh, including a 20-foot Niles boring mill, a 20-foot planer, a 24-foot extension lathe, a boring bar machine and two Niles steam hammers. The company have just completed for Lyon & Drews, Chicago, the largest dredge on the great lakes, and are completing dredges for contractors in Chicago, Buffalo, Duluth and Cleveland. They are now using a tract of dockage about 650 feet, and plans are being considered for the erection of additions which will more than double the capacity of the present plant.

Industrial Affairs in Scotland.

As the close of the year approaches business in the iron and steel trades on this side of the border seems to grow small by degrees and dismally less. Christmas is not a holiday time in Scotland among the working classes, so that work will be continued as usual over what in England is called the "festive season." But about December 27 or 28 there will be a slowing down preparatory to the total stoppage, which takes place December 31. The New Year holidays form the great event in the year of the industrial classes, and this time this will be prolonged until the second week in January—perhaps even longer in many cases—because the men have been earning good wages for a long time past, and have a good pocketful to spend on enjoyment, and also because the employers, not being overburdened with orders, are disposed to rest on their oars for a spell. The semiannual overhaul of plant, boilers, buildings, &c., may be made to take a little longer than usual. And by prolonging the holiday the downward course of coal will, it is hoped and expected, be accelerated. That, however, depends on whether or not the colliers prolong their holiday also, for if the pits do not resume working for a fortnight there will be no accumulation of coal by the suspension of industrial consumption. It is probable, however, that work in the pits will be resumed by January 7 or 8, in which case there will be accumulation of coal heaps when factories resume.

The Coal Situation.

Up to the present the collieries are making a full output; fuller, perhaps, than they have ever done before. And at the same time the shipments from Scotch ports are falling off week by week. Last week, for instance, there was a decrease of 17,447 tons as compared with the previous week and of 345 tons as compared with the corresponding week of last year, when the boom was beginning.

The net increase in the Scotch shipments to date, as compared with the corresponding date of last year, is 1,960,780 tons, which is certainly a large growth. But it naturally raises the question, If that increase is lost next year by the decline in the foreign demand, what is to become of the other 2,000,000 tons of coal? Home consumers do not want them, and are not likely to want them; so we are promised an early glut of coal as the sequel of the recent dearth. This, of course, will be to the advantage of iron and steel producers in enabling them the better to face the keen foreign competition in our home markets. The trouble will be to meet American, German and Belgian competition in foreign markets. It will be of interest to show the course of prices of Scotch coal since the beginning of 1899:

	Steam. Per ton.	Splint. Per ton.	House. Per ton.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
January, 1899.....	9 9 to 10	9 9 to 10	9 6 to 9 9
November, 1899.....	11 6 to 11 9	11 9 to 12	11 to 11 6
January, 1900.....	13 6 to 14	13 to 14	13 6 to 14 6
February, 1900.....	15 6 to 15 9	15 6 to 15 9	15 6 to 16
June, 1900.....	15 to 15 6	15 9 to 16	16 to 16 6
August, 1900.....	17 6 to 17 9	17 to 17 6	17 6 to 18
November, 1900.....	14 to 14 6	14 6 to 14 9	13 to 14

Prices are, while these lines are being written, fully 1 shilling per ton below the November rates quoted in the foregoing table, and ironmasters are complaining, quite justifiably, of having to pay 13 shilling per ton at the pits for splint, which is about 1 shilling 6 pence per ton more than coal owners are now obtaining f.o.b. for shipment.

If all the reports one hears are correct there is more American pig iron and steel being pressed here for sale than ever, and almost lower prices than ever. It is not easy to get at the real truth about these reports. Some of them may be the result of mere "sounders" by American agents. There is, at any rate, not much being actually sold, though contracts for delivery over part of 1901 are being discussed. The fact is that shipbuilders have now pretty well covered all their material and other consumers also are loaded up.

Shipbuilding.

The drop in freights has had a chilling effect on ship owners, and the expected orders for cargo "tramps"

are not coming forward. All the contracts one hears of—and they are only in the air, and may or may not be pulled off—are for a couple of 8000-ton mail boats for the Royal Mail Steamship Company and a couple of large intermediate boats of the "Sarsonia" type for the Cunard Company. The contracts actually closed this month, in so far as reported, included six 2000-ton 1500 horse-power boats for the coasting service of the China Steam Navigation Company. These are to be built by Scott & Co., Greenock, who have also contracted with the Admiralty to supply the 15,000 indicated horse-power engines for a twin screw battle ship, the hull of which is being built in the Government dock yard at Cheltham.

Admiralty Orders.

This last order makes up a very full catalogue of work now in progress on the Clyde for the Admiralty. The battle ship, for which the Scott engines are intended, is to be of 15,000 tons displacement, and to have a speed of 18 knots. Therefore engines are to develop 15,000 indicated horse-power, and will be of the three-cylinder, three-crank and triple expansion type. The cylinders will be 31½, 51½ and 84 inches in diameter respectively, with a 51-inch stroke. There are to be 20 Belleville boilers generating steam at 300 pounds, to be reduced to 250 pounds at the engines, with a heating surface of 37,000 square feet, equal to 2½ feet per horse-power. During the year the Admiralty have allotted to private builders contracts for 39,800 tons of war ships, with engines of an aggregate of 182,800 indicated horse-power, representing a money value of about £4,000,000, and also for engines for several of the vessels being built in the dockyards. The Clyde's proportion of these contracts is 29,400 tons and 59,000 indicated horse-power, representing a money value of about £2,250,000. In 1899 the Admiralty contracts placed with Clyde firms were 20,250 tons and 78,000 indicated horse-power. The sums out of the naval vote for 1900-1901 to be spent in Clyde establishments are £993,300 at John Brown & Co.'s, Clydebank; £946,000 at the Fairfield Shipbuilding & Engineering Company's, Glasgow, and £213,500 at the London & Glasgow Shipbuilding & Engineering Company's, Glasgow.

Naturally great interest is being taken here in the American Shipping Subsidy bill, which we are assured by several American correspondents will certainly be passed this Congress. Somehow shipbuilders are not greatly alarmed at the prospect, for they do not get many orders from America, and the world's sea commerce is constantly growing. Ship owners, however, are a little uneasy, for a comparatively small addition to the world's tonnage may make a large difference in freights. If Americans build much under the ægis of the Subsidy bill (should it pass) freights all around may easily drop 50 per cent. within five years, and then where will the plunder be?

Tonnage Launched in 1900.

The addition made by Scotch shipbuilders to the tonnage of the world is now ascertained to be 541,030 tons. There have been some different figures put forward which were "too previous," and the above may be taken as the correct total. It compares with 536,870 tons in 1899, and therefore exceeds the previous highest record by 4160 tons. In 1898 the total was 500,000 tons, so that for three years our shipbuilders have been working at high water mark. The tonnage launched in 1900 comprised about 15,000 tons of cruisers, 450,000 tons of merchant steamers of various types and sizes, 17,000 tons of dredgers, 2000 tons of steam trawlers, 7240 tons of sailing vessels and the rest of miscellaneous craft, such as yachts, barges, tugs, stern wheelers, &c. There is no limit to the variety of floating craft produced on the Clyde. In 1899 there were no sailers launched in Scotland; in 1900 there have been four. The vessels built for foreigners in 1900 aggregate 140,000 tons, as against 103,000 tons in 1899, thus showing that foreign competition has not reduced our foreign trade for ships. The entire launches represent a fleet of 406 vessels of all sorts and sizes. The following were the proportionate outputs of the several shipbuilding centers:

	Number of vessels.	Tons, gross.
Clyde	318	492,609
Forth	33	18,402
Tay (Dunall)	14	21,639
Dee (Aberdeen)	41	8,381
Totals	406	451,031
In 1899	361	536,872

And the following were the outputs of the principal firms:

Firm and yard.	Tons, gross.
Russell & Co., Port Glasgow	60,339
A. Stephen & Sons, Linthouse	34,555
C. Connell & Co., Whiteinch	32,316
Denny & Co., Dumbarton	30,603
Scott & Co., Greenock	29,970
D. & W. Henderson, Meadowville	28,930
John Brown & Co., Clydebank	26,250
W. Hamilton & Co., Port Glasgow	21,599
Caird & Co., Greenock	22,714
Napier & Miller, Glasgow	20,718
A. Rodger & Co., Port Glasgow	19,615
Fairfield Company, Glasgow	17,765
Barclay, Curle & Co., Glasgow	17,650
W. Simons & Co., Renfrew	15,550
A. McMillan & Son, Dumbarton	13,985
R. Duncan & Co., Port Glasgow	10,620
D. J. Dunlop & Co., Port Glasgow	8,320
Lobnitz & Co., Renfrew	6,356
A. & J. Inglis, Glasgow	7,450
W. Beardmore & Co., Glasgow	6,250

And quite a number under 6000 tons whose output we reserve.

As before, and for the third year in succession, Russell & Co. head the list in respect of total tonnage, but if the quality of the tonnage were taken into account and represented in terms of money, the first place would be held by John Brown & Co., Clydebank. There is not time, however, this mail to analyze the returns of the several builders, and further details must be withheld until next week. B. T.

The Nicaragua Canal.—A special statement of Prof. Emory R. Johnson, a member of the Nicaragua Canal Commission, on the traffic resources of the canal and its effect upon the commercial industries of the United States was submitted to the Senate this week by Senator Morgan, who states that the statement "proves conclusively that as an investment the Nicaragua Canal will earn a highly remunerative profit on a cost even of $200,500,000, which is the extreme estimate of cost presented by the Isthmian Canal Commission." Professor Johnson, in his statement, makes a number of statistical estimates. For the year ending June 30, 1899, he says that 3,426,752 cargo tons of United States commerce could have used the canal, and 3,346,377 tons for South, Central and British America and 5,736,456 European tonnage. The commission estimates that 7,500,000 tons of traffic will be available for the canal in 1914, after the canal has been opened; the traffic will increase to a traffic of 11,250,000 tons in 1924.

A New Rod Mill Record.—No. 2 rod mill of the Illinois Steel Company, at Joliet, produced during the 48 turns in December, 9643 gross tons of No. 5 rods, or an average of 201 gross tons per turn. The best turn during the month was the night of December 17, during which 245 gross tons were made. This is the world's record.

The Republic Iron & Steel Company, Chicago, are distributing to the trade the Standard daily memorandum desk calendar. This calendar has exceptionally large sheets for daily memoranda, and on each sheet the company have printed some one of their lines of products. The products of the company are sufficiently numerous to take sheets for nearly half a month before repeating.

At the Bureau of Supplies and Accounts, Navy Department, bids will be received until noon, January 29, for a quantity of machine tools, locomotive, crane, scales, ingot tin, bar iron &c. The materials are for the Boston Navy Yard. Proposal blanks are issued by A. S. Kenny, paymaster-general United States Navy, Washington, D. C., and are furnished at the navy pay office, Boston, Mass.

The Iron Age

New York, Thursday, January 17, 1901.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

Freight Rates on Grain and on Steel.

During the past few weeks Andrew Carnegie has appeared as an active champion of the steel manufacturers of the Pittsburgh district in their demands for a readjustment of freight rates on iron and steel. It was only through a misunderstanding that his success is only partially complete.

While the iron trade at large may have and does still regard this movement as one calculated to benefit the already too powerful Pittsburgh district, in reality it is of far greater significance than is at first suspected, and is of more general application because it tends to establish an important fundamental principle.

It appears that in the course of the negotiations the question of the relative rates on grain and on steel products came up for consideration. The railroad officials made the point that the lower rates on grain were justified on the ground that it is a commodity lower in price. Mr. Carnegie held that the contrary is the case, and upon investigation his view was confirmed. Thus the fact has been established by a comparison of the selling prices of steel rails and of wheat, over the last five years, that wheat was $7 per ton dearer than steel rails. An examination, too, was made as to the average selling prices of corn, wheat and oats on the New York Produce Exchange for a series of five years. Similarly the actual selling prices taken from the books of a large Pittsburgh concern, for a like period, on billets, steel rails, structural steel and plates, were established. In order to bring both sets of figures to a common basis $1.50 per ton was deducted from the New York grain prices to reach an equivalent of the Pittsburgh figures.

The result shows that the average value of the grains named comes within 10 cents per ton of the average values of the four lines of finished steel products chosen for comparison.

Now the plea is made, and it seems unanswerable, that iron and steel are entitled to rates as low as are those made on grain, and this plea is strengthened by further considerations, bearing on the relative cost of handling of both to the carrier. In conveying grain the railroad takes the risk of damage and of loss in transit, which is serious, while it is practically *nil* with steel products.

We believe that the points raised by Mr. Carnegie are bound to introduce for the future a new principle into the problem of establishing equitable rates on iron and steel, and in pressing this consideration he has conferred upon the whole iron and steel industry of the United States a signal service.

An extraordinary building boom is developing in Chicago and its vicinage. Architects are extremely busy getting up plans and specifications for all classes of structures, from stately office buildings and apartment houses to innumerable dwellings of all descriptions. A suggestion of the magnitude of the improvements awaiting the opening of the building season is contained in the statement made on good authority that in the spring foundations for 500 flat buildings will be laid within a radius of a few blocks in one street of the Twenty-Eighth Ward. A special reason exists for this activity, of course. Very little building was done last year because of the fight between the contractors and the labor unions, hence the business of this year will represent a great deal of work which would under more favorable conditions have been done last year.

Few Failures in 1900.

Reflecting upon the course of trade in 1900 one cannot but be impressed with the fact that the year passed with so few failures among iron and steel interests. The decline in prices was a severe strain, as it caught manufacturers with materials contracted for at high rates, consumers with stocks bought at inflated values and merchants with goods representing a valuation of 50 to 100 per cent. over that of little more than a year before. Yet very few failures have occurred in the iron trade, either among manufacturers of iron and steel, makers of finished products in iron and steel, or merchants carrying stocks of such goods. It may be said that many failures were expected when prices began to sag seriously, and some of the very great manufacturing companies were obliged to arrange for the postponement of deliveries of materials for which they had contracted during the excitement of the boom of '99. When great companies were obliged to take such action, it was to be presumed that smaller concerns with necessarily limited financial resources would find themselves in rather tight quarters. Therefore, although the year was not without its commercial wrecks in the iron trade, their very small number is a cause of congratulation.

The excellent financial condition of the country as a whole, during the entire year, is doubtless the principal cause of this satisfactory showing. Money was abundant, lenders looking for borrowers, and those needing accommodations were easily able to secure them unless hopelessly involved. Nevertheless, despite the favorable condition of the money market, which is the first essential, the iron and steel interests would have received a much greater shock, and failures would have been much more numerous, but for the heavy restriction in production during the summer months and the maintenance of prices on a large line of staple products. The restriction of pig iron production was a very important matter, but much more so was the curtailment of output by the wire mills, bar mills, sheet mills and tin plate factories. The products of these industries are not only the raw materials of innumerable other industries, but they are also carried in stock by thousands of merchants. The heavy cut in wire which was made in April established a basis for the remainder of the year, which was steadfastly maintained, while the output was reduced to the bare wants of the trade. In the other lines referred to a greater effort was made to hold the prices at which the year opened, but on July 1 the production almost wholly ceased, pending the adjustment of wages for another year, and was not resumed for nearly three months, with practically a suspension of mill quotations for current business. This afforded the consuming and distributing trade a most welcome opportunity to work off their stocks without loss. No fresh supply coming from the primary manufacturers, the stocks in second hands were not sacrificed and in due time were completely disposed of with profit to the buyers. When manufacturers' prices were subsequently reduced on bars, sheets and tin plates the trade was practically without stocks. This is illustrated by the experience of one of the largest tin plate dealers in the country, the shrinkage on whose

stock was less than a thousand dollars when the manufacturers reduced their prices in the autumn. Yet in his case, and presumably that of others, the figured shrinkage proved no loss, as tin plates commanded a high price for some time afterward, because the factories could not fill all orders immediately after resuming operations. Unquestionably, if the great consolidations in these lines had not been strong enough to discontinue production for a quarter of a year and thus permit their customers to dispose of their high priced stocks, the commercial record of the year would have been stained by many a failure, instead of so few. That had been the experience of previous booms, and it had been feared as a result of this one. But instead of heavy losses and a generally bad showing for the year, it is now found that manufacturing consumers and merchants are contemplating their balance sheets with pleasure and satisfaction. Having been enabled to tide over the depression of the summer months with fully as good financial returns as in ordinary years, they were well prepared to handle the heavy trade of the autumn and then pile up their tonnage and their profits.

The Rail Requirements of the United States.

The iron trade has always been much interested in following developments in the steel rail trade, although directly very few are engaged in this branch of the industry. Although the requirements for metalling our roads do not take so large a proportion of the tonnage as once they did, still it does remain the largest single branch. For that reason it tells on the situation in the raw materials—ore and coke—it affects the production of pig iron and of spiegeleisen, and when the trade is slack may cause uncomfortable pressure on other outlets for steel.

Statistically the principal elements relative to the consumption of steel rails may be fairly well determined, the one troublesome factor being the estimation of the requirements for renewals. Of course stocks in the hands of consumers or of producers play a very minor role, and may be neglected altogether. The production we know, and approximately we have figures showing how much thereof was used for the building of street railway lines. A certain tonnage of T-rails, however, goes to suburban electric lines, the quantities having been notable in recent years. On the other side we know, through compilations of H. V. & H. W. Poor, the total mileage of main track and side tracks of the railroads of the United States, the annual additions to mileage and the percentage of track still metalled with iron.

The statistics of production by James M. Swank of the American Iron and Steel Association show the following figures:

Production of Rails.—Gross Tons.

Year.	Total.	Street rails.	Steam rails.
1892	1,551,844	111,580	1,440,264
1893	1,136,458	133,423	1,003,035
1894	1,021,772	157,457	964,315
1895	1,306,135	163,109	1,143,026
1896	1,117,663	145,210	962,453
1897	1,645,020	122,244	1,522,776
1898	1,977,922	143,815	1,834,107
1899	2,271,108	154,246	2,116,862
1900 (estimated)	2,350,000	150,000	2,100,000

To arrive at the consumption of the steam railroads of the United States we must, of course, deduct the exports to reach net figures. The data are given in the following table:

Steel Rail Production and Exports.—Gross Tons.

Year.	Production. Steam rails.	Exports.	Net consumption.
1893	1,003,035	19,712	983,323
1894	964,315	12,229	952,086
1895	1,143,026	78,807	1,134,219
1896	962,453	72,503	889,950
1897	1,522,776	142,808	1,379,968
1898	1,834,107	293,592	1,540,515
1899	2,116,862	271,272	1,845,590
1900 (estimated)	2,100,000	400,000	1,700,000

In dealing with the requirements we have: First, the replacement of iron rails in track by steel rails; second, the quantities of rails used for the building of second tracks, sidings, &c.; third, the quantities used for building new lines, and finally the tonnage for replacing worn out rails or metal too light for the traffic.

Turning first to the replacement of iron rails, we find that the iron rail mileage has declined from 39,920 miles in 1892 to 20,717 miles in 1899, say 18,200 miles in eight years, which at 110 tons per mile for 60-pound rails would represent an average consumption of 250,000 tons per annum. For the next few years this is likely to go on at about the same rate.

For the construction of second track and sidings a good deal of material is used, which is taken from the main lines or is purchased in the open market in the form of relayers. We find that in the last eight years the average increase in the second track has been 1600 miles, which at 50 tons of new rails per mile would call for 80,000 tons annually. This is based on the estimate that one-half of the material going into the sidetracks is taken from the main line or is purchased in the form of relayers.

Then we have the requirements for new roads. For these the same allowance must be made for the steady increase in the weight put into the new lines per mile. Formerly 70 pounds per yard or 110 tons per mile was a fair average. Now, however, the figure must be higher. In the following table we have gradually increased the weight from 110 to 125 tons per mile:

Rail Requirements for New Mileage.

Year.	Miles built.	Rails required. Tons.
1892	4,419	486,000
1893	2,282	251,000
1894	1,898	209,000
1895	1,603	176,000
1896	1,668	192,000
1897	2,161	259,000
1898	3,199	400,000
1899	4,528	566,000
1900 (estimated)	4,800	600,000

Finally we have, by difference, the quantities of rails used for repairs and renewal of tracks, as below:

Rail Requirements for Renewals.

Year.	Tons.	Year.	Tons.
1893	403,000	1897	791,000
1894	413,000	1898	810,000
1895	628,000	1899	950,000
1896	368,000	1900	770,000

These figures bear out the contention on the part of rail makers that the roads for years economized sharply on renewals and that only in recent years has it come up to what might be termed the normal figure. During the period of 1893 to 1896 inclusive the average mileage of main track was a little under 180,000 miles, so that, taking 60 pounds as the average weight of the rails, there were 18,000,000 tons of rails in the tracks and yet the renewals were only in the four years 1,812,000 tons, or say, 2.5 per cent. per annum. During 1897, 1898 and 1899 they averaged 850,000 tons per annum, they figure out about 4.6 per cent.

The question naturally arises whether the greater activity in renewals since 1896 has fully atoned for the skimping of former years. We believe that such has been hardly the case, although it is doubtful whether 700,000 to 800,000 tons per year should be regarded as normal merely to provide for the necessary current renewals. After all, the question of price plays an important part

and usually the normal spread between the prices of new rails and old rails leaves the net cost serious.

The railroads cannot expect many repetitions of the experience of last year, when in isolated cases they obtained more money for the old rails taken up than they paid under old contracts for the new rails they were putting down.

Judiciously handled the railroads will yield a large tonnage this year.

CORRESPONDENCE.

Reciprocal Trade Arrangements with Russia.

To the Editor: The Ingersoll-Sergeant Drill Company desire to call your attention to a matter which has recently come to their notice and which they think might prove of interest to the patrons of your esteemed paper.

An effort is being put forth by the beet sugar interests of this country to prevent the importation of beet sugar from Russia by having the Secretary of the Treasury abrogate the clause in our present reciprocal arrangements with Russia wherein the said sugar is brought into this country under the favored nation rate of duty. This will prohibit any further imports of sugar from Russia by putting in force the tariff of the Dingley bill against said sugar, which will, with the Internal Revenue tax, if the sugar manufacturers of Russia must buy their own goods, effectually put a stop to any further importations from that quarter.

While the Ingersoll-Sergeant Drill Company do not contend that the beet sugar interests shall not have the widest possible scope in the exercise of their rights, we do, however, maintain that it is the duty of every American manufacturer to take warning as to how his own interests are to be affected by this proposed action.

If the Secretary of the Treasury carries out the arrangement which has been proposed, and which we believe is suspended for about 60 days, it will be promptly met by retaliation from Russia in the shape of an increase in duties against all classes of American manufactured goods, ranging from 25 per cent. to 30 per cent. This will be in effect also prohibitive as to any further exports from this country, and there will be left in the lurch hundreds of American manufacturers with half completed orders on their hands and a new basis of estimates as to expenses which can hardly be met by increase of numbers, as many of the goods which are now being made in American factories to be consumed in Russia have been arranged for by specific contracts. These contracts take no account, of course, of the changes in existing tariff, such changes being entirely unexpected.

You have, we assume, the fullest access to the tables of the Treasury Department as to imports and exports, but if our source of information is correct the total value of sugar imported from Russia during the fiscal year ending June 30, 1899, was but $340,000, while during the same period this country sold to Russia manufactured goods amounting to $10,000,000. We are told that during the first ten months of 1900 we sold to Russia $9,440,000 of goods. This of course means goods sold direct and going into Russia via the Baltic and Black Sea ports, and takes no account of the millions of dollars' worth of goods which have been imported into Russia via England and Hamburg.

It is our belief that the National Association of Manufacturers of America should form committees and deputations, and every company and private concern, whether a member of this association or not, should in every way possible prevent the consummation of this very radical action.

The public should be informed, if it does not already know, that upon the completion of the Trans-Siberian Railway system the field which will be offered in Siberia for American machinery of all kinds will be unprecedented. You are, of course, aware that under our present arrangements all articles manufactured in this country are admitted absolutely free of duty to the port of Vladivostock and other Asiatic ports of Siberia and Russia.

We are writing you on this subject, as we have written the National Association of Manufacturers of America, hoping for your co-operation and interest in giving the manufacturers of America the fullest possible warning before this radical action is taken by the Treasury Department at Washington. Our interest is to encourage and not discourage foreign governments to admit American manufactured products free of duty, and this measure to which we have referred, if carried out, will seriously curtail opportunities for doing foreign business. We would therefore like to have the co-operation of the scientific press in preventing this action.

THE INGERSOLL-SERGEANT DRILL COMPANY,
W. L. Saunders, Vice-Pres.

NEW YORK, January 11, 1901.

Expanding Boiler Tubes.

To the Editor: Referring to an illustration of an alleged improvement in this class of work in a recent issue of your paper, permit me to say that it is undesirable to enlarge the body of the tube inside of a boiler, for the reason that it is frequently necessary to remove the tubes by cutting them out inside of the heads, or, in another way, by not cutting them at all anywhere, simply driving the ends of the tubes together outside of the head and forcing them through. It is impossible to get a tube out of a boiler where the body of the tube inside is larger than the tube hole. Expanding tubes with the roller expander is one of the quickest operations required in making a boiler, especially so with air tools. Even by hand work alone it is quick work if the holes in the sheets have been properly drilled. In no case should they exceed 1-64 inch in diameter larger than the tube to be rolled, no matter what its diameter. The common practice is to make the holes very much larger than the tubes, even to 1-16 inch in some cases. I have met with many such instances with tubes no larger than 1¼ inches outside diameter. The result of this is not only a loss of time in rolling the tube to the sheet, but a waste of tensile strength in the tube sheets and tube ends, with the still greater mischief of destroying the nature of the tube ends. When tubes are excessively rolled the material is greatly condensed and spring hardened, so that after a certain tension is reached the tube cannot be made tight, springing out to the sheet with the live force of the roller and springing back again so soon as the roller is removed. The opposite is the case where tube holes are properly drilled; one man can easily roll tubes at the rate of 35 to 40 an hour, on one end. When, however, it is required that a man shall handle strips of metal and perform all the operations of picking them up and extracting the waste, the time required would be far greater and the expense of a tool to do such work many times greater than that of the simple roller expander.

EGBERT P. WATSON.

181 MADISON AVENUE, ELIZABETH, N. J.

The Robert Field Company have organized for the purpose of conducting a general pig iron and coke commission business, with offices in Columbus, Ohio, and St. Louis, Mo. They are agents in these territories for the Sloss-Sheffield Steel & Iron Company and the Dayton Coal & Iron Company, Limited. Robert Field, the treasurer of the company, was previously connected with the firm of Stevenson, Field & Co.

Among the newly licensed Illinois corporations are the Bird Iron Company, with a capital of $50,000, to develop the Voos exploration of high grade Bessemer ore near Crystal Falls, Mich. The officers of the new company are: President, George B. Penwell; treasurer, E. E. Crepin; secretary, M. S. Sanders; superintendent, Arthur E. Buzzo. The directors are George B. Penwell, E. E. Crepin, R. Floyd Clinch, M. S. Sanders and John Creerar.

E. C. Converse, president of the National Tube Company, declines to make any statement for publication relative to the position of the company in the matter of the establishment of a tube mill at Conneaut, Ohio, by the Carnegie Steel Company.

British Trade Union Statistics.

A recently issued report of the chief labor correspondent of the British Board of Trade on trade unions in the United Kingdom deals with the figures for 1899, and also gives comparative statistics for the years 1892-1898. From the returns thus collated it appears that the membership of all the unions at the end of 1899 was 1,802,518, as compared with 1,503,232 at the end of 1892, an increase of only 20 per cent. in eight years. The unions which most largely increased their membership during 1899 were those in the mining and quarrying industries, which yielded an increase of 71,084 members, or 20 per cent. The accounts of 100 of the principal trade unions are analyzed in order to show in detail their income, funds in hand and expenditure. Averaging the figures for the past eight years, it is seen that out of a mean yearly expenditure of $7,214,400 21.4 per cent. was disbursed as dispute pay, 59.8 per cent. was paid away to unemployed members and as friendly benefits, and 18.8 was absorbed in working and other expenses of management. The dispute pay naturally varies considerably from year to year, the percentage for 1899 being 9.4 per cent. The amount of contribution per head varies considerably in the different unions. In some cases it reaches as much as $20, while in others it is only a fraction over $1.50. As to the sex of the members, no fewer than 139 unions include women in their *personnel*, the actual number of women so organized being 120,448. Women, therefore, represent about 7 per cent. of the membership of all trade unions, and 39 per cent. of those which admit both sexes. The proportion of trade unionists to the general industrial population remains about the same as for several years past—viz., one in four. In the case of women in factories and workshops the proportion is rather more than one in ten.

Stahl und Eisen publishes quite an elaborate report by F. Heissig, engineer of the Maschinenfabrik Andritz of Andritz bei Graz, Austria, on a new tool steel. It is claimed that this steel, which is manufactured by Gebrueder Boehler & Co. of Vienna, Austria, has secured results superior to those obtained by the Taylor-White process of the Bethlehem Steel Company. The inventor is Fridolin Reiser.

One of the heaviest contracts ever taken in hand at the Chester, Pa., works of the American Steel Casting Company was completed last week. The castings, which consisted of two large wheels, were for an electric firm in Pittsburgh. The wheels were cast in five segments, each of which weighed 30,000 pounds. The casting of the ten segments was done without the slightest difficulty. The original order was for six complete wheels, but the plant has been so busy that it was found necessary to ship the patterns to Sharon, Pa., where the remaining four wheels will be cast.

During the month of December the Keystone branch of the American Bridge Company made 6218 tons of bridge and structural steel, possibly the largest record ever made by a single American plant. The largest previous shipment by the same plant was 4500 tons in May, 1900.

The Census Bureau has issued a bulletin stating that the center of population is in latitude 39.9.36; longitude, 85.48.54. In ten years the center of population has moved westward about 14 miles and southward about 3 miles. It now rests in Southern Indiana, at a point about 7 miles southeast of the city of Columbus.

The Cuban Steel Ore Company, in which the Pennsylvania Steel Company are the principal interest, have made a mortgage to the Girard Trust Company of Philadelphia as trustee on their railroad and real estate in the province of Santiago, Cuba, to secure an issue of $750,000 6 per cent. lawful money bonds, dated December 15, 1900, due December 15, 1910, with option to company to redeem at par and interest at any time upon 30 days' notice. The interest is payable June 15 and December 15. The mines of the company are situated about 50 miles west of Santiago.

PERSONAL.

Otis H. Childs, president of the Lincoln Foundry Company, of Pittsburgh, will have the sympathy of his friends in the death of his wife, which occurred at their home in the East End, Pittsburgh, last week. Mrs. Childs had been ill for several years.

E. A. Kern of Niles, Ohio, has been appointed superintendent of the four-mill sheet plant to be built by the Youngstown Iron & Steel Roofing Company, at Haselton, Ohio. Mr. Kern was formerly superintendent of the plant of the Falcon Iron & Steel Company, at Niles, Ohio.

Chas. F. McDonald, superintendent of the converting department of the Duquesne Steel Works of the Carnegie Steel Company, will be given a trip to Europe at the expense of that concern. He will leave in April and be gone about two months.

S. H. Stupakoff has resigned his position as general superintendent of the Pennsylvania Malleable Company, McKee's Rocks. He will devote his time to the manufacture of melting machines and other specialties of his own invention.

Ernest Vaughn has been appointed superintendent of the Gerard mill of the American Steel Hoop Company, at Youngstown, Ohio, succeeding Harry Zellars, who has gone to the Pomeroy mill in a similar capacity.

Fritz Gleim has severed his connection with the Mineral Products Company of Moncton, N. B., and has accepted the position as superintendent of the Everett Furnace, Joseph E. Thropp, Everett, Pa. The Mineral Products Company do not as yet see their way clear to erect a furnace in Canada for the production of ferromanganese, because it will take several years to sufficiently develop the ore property.

George S. Bowman has been appointed purchasing agent of the American Iron & Steel Mfg. Company, vice H. H. Light, resigned.

C. Yngstrom of the Stora Kopparberg Company, Falun, Sweden, is expected in this country soon.

John R. Morgan of Alliance, Ohio, has accepted the post of chief engineer of the Case Mfg. Company of Columbus, Ohio.

The American Bridge Company announce the following appointments: E. W. Stearns has been appointed manager of the East Berlin, Conn., plant, and Frank S. Moore manager of the Lafayette, Ind., plant. All the Pittsburgh plants have been consolidated into one, and J. W. Walker appointed as manager. C. A. Billings having been appointed assistant treasurer for the New York district, H. W. Post has been appointed as manager of the Post & McCord plant.

In the *Bulletin* of the American Iron and Steel Association James M. Swank says: "When our last annual statistical report was printed, in May, 1900, we announced on an introductory page that it was the last that we would prepare. We now announce the appointment of Wm. G. Gray as the statistician of the American Iron and Steel Association, who will continue for the association and upon its well-known lines the collection of the statistics of iron and steel and related products. Having ourselves completed 28 years of continuous service as the executive head of the American Iron and Steel Association and as the editor of its publications, our friends in the association will no longer expect us to give that attention to the details of office work that we have heretofore done. During the remainder of our connection with the association we will, however, continue to guard all its interests as carefully as we have done in the past. Its general management, its financial affairs, the editing of the *Bulletin*, &c., will receive all the attention we have heretofore given to them."

Robert M. Thompson of the Oxford Copper Company has been elected a director of the Bank of the State of New York.

David Strauss has resigned as secretary of the Ohio Falls Iron Company, New Albany, Ind., and on February 1 will go to New York, where he will engage in business

with his brother-in-law, Samuel Joseph of Cincinnati. For a number of years Mr. Strauss was secretary of the old Indiana Forge & Rolling Mill Company, now owned by the Republic Iron & Steel Company.

The American Bridge Company have grouped all their Eastern plants in one section, and have appointed A. J. Major, formerly manager of the Bridge and Construction Department of the A. & P. Roberts Company, as manager of all these plants, which include the following: The Pencoyd plant, the East Berlin plant, the Buffalo plant, the Edge Moor plant, the Elmira plant, the Groton plant, the Hilton plant, the Horseheads plant, the Trenton plant, the Post & McCord plant, the Rochester plant and the Union plant.

John W. McGrady has been appointed chief steel inspector of the Carnegie Steel Company, at Homestead, Pa., in succession to the late J. W. Parker, whose assistant he has been for the past year.

The employees of the Crane Company, Chicago, on the 12th inst. presented President R. T. Crane with a set of resolutions thanking him for his many acts of kindness. The resolutions were elaborately gotten up and were bound in a manner to make them a cherished souvenir of the good will of the company's thousands of employees.

Lawrence C. Phipps and Charles L. Taylor of the Carnegie Steel Company have gone to California for an extended visit.

W. E. Corey, general superintendent of the Homestead Steel Works of the Carnegie Steel Company, sails for Genoa, Italy, on Tuesday, January 22. Mr. Corey will remain abroad about two months, and goes for a much needed rest. Mr. Corey will be given a banquet at the Hotel Schenley, Pittsburgh, on Saturday evening by the under superintendents and heads of departments of the Homestead Steel Works.

OBITUARY.

CLIFFORD B. HENDRICKS.

Clifford B. Hendricks, of the old established metal firm of Hendricks Brothers, 49 Cliff street, New York, proprietors of the Belleville Copper Rolling Mills, died on January 14, at his home, 512 Fifth avenue, New York, from pneumonia. Mr. Hendricks, who was 39 years of age, was a son of the late Joshua Hendricks, and had been a member of the well-known firm of copper manufacturers and metal merchants from his youth. He was a member of the Board of Managers of the New York Metal Exchange and was widely known and esteemed in the trade.

WALTER STEEL.

Walter Steel, one of the founders of the Carpenter Steel Works, of Reading, Pa., died on January 9, at his home in Reading, from the effects of blood poisoning. Several months ago the large toe of Mr. Steel's left foot became inflamed, as the result of irritation caused by the shoe. Mr. Steel paid little attention to it, but about five weeks ago the member began to cause him great pain and became considerably swollen. Mr. Steel went to a physician and began treatment, but he grew steadily worse. Mr. Steel was born in Sheffield, England, 50 years ago. At the time of his death he filled the position of general manager of the Philadelphia Steel & Iron Works, at North Reading.

CLEMENT HACKNEY.

Clement Hackney, for several years general manager of the Fox Pressed Steel Company of Chicago, died January 6 in Milwaukee, Wis., after an operation. He was born in Warrington, England, and was 52 years old. Coming to this country when a youth, he entered the railroad service as an engineer, in which capacity he served for ten years, when he became connected with the Milwaukee Iron Company as superintendent of their mechanical department. From 1878 to 1885 he was assistant superintendent of machinery of the Atchison, Topeka and Santa Fe Railway. He then became superintendent of machinery and rolling stock of the Union Pacific Railway, which position he held until he became general manager of the Fox Pressed Steel Company. He had charge of the building of the company's plant at Joliet, Ill. A little less than two years ago Mr. Hackney was compelled to resign his position on account of failing health. He spent some time abroad with the hope of regaining his strength, but returned to Milwaukee last year a sick man.

Carnegie Plans.

The announcement that the Carnegie Steel Company of Pittsburgh are to erect a large steel plant at Conneaut, Ohio, has been the all absorbing topic of discussion in the iron trade. That blast furnaces and basic open hearth steel furnaces will be erected is accepted as settled, but many in the trade appear to incline to the opinion that there may be developments which will lead to a modification of existing plans to build a tube works. Mr. Carnegie personally speaks in the most emphatic terms concerning his determination to enter this branch of business, and notes as an advantage that the pipe will be manufactured from basic open hearth steel, which is now specified by the leading consuming interest.

The location at Conneaut was chosen because the necessary large tract of land was not available in the Pittsburgh district, and because steel can be made there at low cost, for the reason that the fuel can be hauled very cheaply on the Carnegie road in returning empty ore cars conveying ore from Conneaut to the Pittsburgh plants. Mr. Carnegie holds very strong views as to the advantage of water transportation to reach domestic and foreign markets, and is taking a deep interest in promoting the development of water highways.

Avowedly the Carnegie Steel Company have decided that in view of recent developments their policy must be to carry the processes of manufacture forward from the ore and coal in the ground to the finished marketable product. In other words, ultimately no steel will be marketed in the form of the billet. The Carnegie Steel Company now produce steel rails, structural material and plates. Quite recently the manufacture of axles has been added, the Howard plant making 9000 tons of car axles per month. In a few months the plant now building for making steel bars and allied products will be completed. The Conneaut plant will take care of the line of pipes and tubing, which is regarded as a branch which is bound to develop largely. It is understood that plans have been completed for the building of a very large sheet mill, if in fact the contracts are not already placed for the machinery.

An outlet for additional steel is to be sought in wire rods, although that will probably not be taken in hand for some time to come.

It is reported, however, that the tremendous development in the consumption of steel plates will probably at an early date lead to the putting down of additional plate mills.

In fact, Mr. Carnegie takes the ground that the wise policy for the vast concern which is his creation is to keep slightly ahead, in the development of plant, of the requirements of the immediate future, so that the demands of the growing domestic and foreign markets may be readily met as they arise.

Such briefly are the comprehensive plans of the Carnegie Steel Company, which, however, with all the vigor of the man at the helm his associates, need time to mature.

The annual banquet of the Engineers' Society of Western Pennsylvania will be held in the Hotel Schenley, Pittsburgh, Thursday evening, February 21. Chas. Hyde, Pittsburgh, is chairman of the Reception Committee.

A meeting of the blast furnace employees of the Mahoning and Shenango valleys was held in Youngstown, Ohio, on Tuesday, January 15. The purpose of the meeting was to take up the matter of a reduction in wages made by the blast furnace operators and to become effective February 1.

MANUFACTURING.

Iron and Steel.

A stock company have been organized at Sharon, Pa., and will purchase the old Kimberly rolling mill, owned by the American Steel Hoop Company, and convert it into a foundry and machine shop. The mill was recently ordered razed and all the machinery has been moved to other plants.

Hall Furnace of the Republic Iron & Steel Company, at Sharon, Pa., will be blown in this week, and Hannah Furnace, at Youngstown, Ohio, about February 1.

The Carnegie Steel Company of Pittsburgh have recently furnished 2615 tons of plates for the rebuilding of the pier and docks of the Mexican Central Railroad at Galveston, Texas, which were destroyed by the flood.

James D. Shields, treasurer of the Chester Woolen Company, and Horace G. Cooke, formerly Eastern representative of the Connersville Blower Company, have purchased the plant at Paterson, N. J., formerly known as the Paterson Iron Company. The new company are incorporating under the name of the Paterson Iron & Steel Forge Company, and the following are the officers: Horace G. Cooke, president and general manager; James D. Shields, vice-president and treasurer; George A. Beckworth, secretary. The plant will be considerably improved and the latest appliances used for the making of iron and steel forgings.

The Passaic Rolling Mill Company, Paterson, N. J., contemplate making improvements and extensions to their plant, which will cost about $200,000 and give permanent employment to several hundred more men. The company at present employ over 1200 men, and of late have been running night and day. Their principal product is structural iron, and their outlet is the New York building market. They have made arrangements to add three gas producers at a cost of $18,000 each, and five open hearth steel furnaces at a cost of $25,000 each, as soon as a part of Getty avenue, running alongside their works is vacated by the city, which it has agreed to do.

The Consolidated Iron & Steel Company, Philadelphia, Pa., inform us that their Bristol mill is so crowded with orders that they were compelled to turn down a 500-ton order. Their export trade has largely increased during the past year, and in the near future they expect to erect a new furnace. A new engine is being put in to increase the capacity of the hoop and band department.

The Westmoreland Steel & Mfg. Company, Pittsburgh, with works at Greensburg, Pa., manufacturers of tool steels, high grade steel bars, forgings, &c., are at present installing four large boilers in their plant, which entails the erection of an additional building 40 x 60 feet, with railroad sidings, &c. The business of this concern is steadily increasing, and enlarged facilities for the manufacture of their products were imperative.

The Carnegie Steel Company will raze and rebuild Carrie Furnace No. 1 at Rankin. The contract for razing the stack and the iron work for the new one has been given to James Lappan & Co., Pittsburgh. The old stack has a capacity of about 300 tons per day, but the new furnace, which will be on the same lines as the present two Carrie stacks now under erection, will have a daily capacity of from 700 to 800 tons. When No. 1 has been rebuilt No. 2 will be razed and a new furnace erected of the same type as No. 1.

A good deal of prominence has been given in the daily press recently to the Canadian Steel Company, with whom E. M. Butz, an architect in the Park Building, Pittsburgh, is connected. We may state that efforts are being made to float the securities of this company in London, for the purpose of providing capital for the erection of a plant in Canada. It is stated this company have been guaranteed a bonus by the English Government of $6 per ton for all finished steel made and $3 per ton for all pig iron made from Canadian ore. The regulations in regard to the payment of these bonuses authorize that on steel ingots manufactured from ingredients of which not less than 50 per cent. of the weight thereof consists of pig iron made in Canada $3 per ton shall be paid; on puddled iron bars manufactured from pig iron made in Canada, $3 per ton; on pig iron manufactured from ore a bounty of $3 on the proportion produced from Canadian ore, and $2 per ton on the proportion produced from foreign ore..

The Bessemer plant of the Republic Iron & Steel Company, at Youngstown, Ohio, has been idle for several weeks, while some changes were being made in the machinery. It is expected the plant will be started up again this week.

The report that the Haselton works of the Republic Iron & Steel Company, at Haselton, Ohio, would be started up in the near future is untrue. This plant, which contains puddling furnaces, bar mill and sheet mills, has not been operated since it was taken over by the Republic Iron & Steel Company, and it is an old plant and may possibly never be operated again.

Some excellent records for production are being made in the 8-inch continuous guide mill of the American Steel Hoop Company at Youngstown, Ohio. For the past five weeks this mill has turned out an average of 100 tons of iron every 24 hours.

Hall Furnace of the Republic Iron & Steel Company, at Sharon, Pa., blew in last week.

A report was current in the daily press last week that the Carnegie Steel Company had bought the pipe and tube mills of A. M. Byers & Co., Incorporated, at Pittsburgh. It is needless to state that the report is entirely unfounded.

The Carnegie Steel Company have taken the first active steps toward the establishment of the new tube works at Conneaut by securing a charter at Columbus, Ohio, for the Conneaut & Eastern Railroad and one for the Conneaut Land Company. Each corporation has a nominal capital of $10,000 and the incorporators are the same in each case. The route of the new road is from Conneaut to the Pennsylvania State line, where the New York, Chicago & St. Louis, or Nickel Plate road, crosses, with a branch northeasterly to the Pennsylvania State line near Lake Erie.

The Green Ridge Iron Works, Lancaster, Pa., have just been overhauled, involving a one-third enlargement of the spike works, the installation of a large automatic spike machine and the addition of a new furnace.

In our issue of January 10 we stated that Dr. Henry C. Utz was president of a company started at Atlanta, Ind. The title of the new concern is the Atlanta Rolling Mill Company.

The Ohio Falls Iron Company, New Albany, Ind., manufacturers of bar iron, are installing another 8-inch mill, adding one heating furnace, three busheling furnaces and putting in a new largest size squeezer; also equipping the mill with five 250 horsepower Hyde patent waste heat boilers. The whole mill will be started next Monday, with the capacity increased to 200 tons of finished iron per day. The company report over three months' work on hand.

The Cherokee Iron Company, Cherokee Falls, S. C., who recently organized, have purchased the properties formerly worked by the King's Mountain Iron Company and the Magnetic Iron Company. The new company expect to erect a furnace in the near future.

The National Tube Company of Pittsburgh are building a small addition to their Christy Park seamless tube works, at Christy Park, near McKeesport.

The La Belle Works of the American Tin Plate Company, Wheeling, W. Va., started up last week, after being idle since last July.

The directors of the Youngstown Iron, Sheet & Tube Company of Youngstown, Ohio, have issued a circular letter to their stockholders, denying that any movement is on foot for the absorption of the company by any of the iron and steel consolidations.

It is stated that the Bessemer plant of the Ohio works of the National Steel Company, at Youngstown, Ohio, will be put on rails about February 1 and will run on rails exclusively for about three months.

For some months labor troubles have existed between the La Belle Iron Works, Wheeling, W. Va., and their puddlers, the firm claiming that they were entitled to a concession in the regular puddling rate by reason of their having improved furnaces. The puddlers refused to give them a lower rate and the result has been that the puddling department of the plant of the La Belle Iron Works has been idle for some months. Recently it was decided to submit the matter to arbitration, and it is probable M. M. Garland of Pittsburgh, a former president of the Amalgamated Association, will be one of the arbitrators. It is expected that the matter will be adjusted in a short time and the plant started.

Some changes are to be made at the plant of the New York Steel & Wire Company, at Astoria, N. Y. The water available for this plant is very impure and extremely bad for steam purposes, and in spite of the fact that compounds as well as a purifying apparatus are used the boilers cannot be kept clean and their foaming cannot be prevented as soon as the steam consumption increases. For this reason it is impossible to run both blooming mill engine and rod mill engine simultaneously, for fear that the boilers would be in a continual state of priming and foaming. Even lately it has become so bad that the rod mill department is not run in the day time and the blooming mill at night, because the boilers cannot be kept clean any length of time. It has therefore been decided to shut down completely the open hearth and blooming departments and to run the rod mill only in day time. The company have also decided to remodel the present rod mill and to increase its capacity considerably. Meanwhile this department is run until such time as everything will be ready to put in the new machinery. It is also the intention to undertake some necessary improvement in the other departments and to make some additions before starting them up.

Machinery.

The W. J. Carlin Company, Twenty-fifth and Railroad streets, Pittsburgh, have awarded a contract to the Dickson Locomotive Works at Scranton, Pa., for 23 new locomotives, 20 of them to be 9 x 14, 36-inch gauge, 12-ton saddle tank locomotives and three of them 10 x 16, 36-inch gauge, 16-ton saddle tank locomotives. The W. J. Carlin Company purchased these engines on account of a heavy demand for engines of this class,

and from the fact that they have orders for 20 pairs of stationary engines of 200 horse-power each, which takes the present capacity of the Carlin Locomotive Works to turn out, and consequently prevented the manufacture of these locomotives in their own shops in Pittsburgh. The W. J. Carlin Company have removed their general offices from 610-611 Lewis Building to the works at Twenty-fifth and Railroad streets, Pittsburgh, the increased facilities at their works being the cause of their removal.

The Union Boiler Works Company, Lebanon, Pa., at a meeting on January 2, elected the following officers for 1901: President, T. H. Capp; treasurer, John Hunsicker; secretary, J. B. Hursh; superintendent, H. T. Richards; foreman, W. A. Schools; directors, Messrs. Capp, Hunsicker, Hursh, Richards, Schools and Robert Mitchell.

The Chandler Pump Company, Cedar Rapids, Iowa, manufacturers of and jobbers in iron pumps, cylinders, &c., inform us that their new building will be a one-story brick structure with a gravel roof and built in the shape of a double L, 80 x 140 x 100 feet, and will be used for the manufacture of a general line of plumbers' brass goods, &c., by a Chicago company now in the same line of business, who will remove their plant there and become associated with them in the manufacture of this special line.

The Diamond Drill & Machine Company, Birdsboro, Pa., have closed a contract for a quantity of tin plate machinery, including among other things ten hot mills, three cold mills and a number of doubling and squaring shears, with several other contracts for tin plate mills and machinery in prospect.

The Weimer Machine Works Company of Lebanon, Pa., have just completed the erection and starting of the Uehling pig iron casting machine at the furnace plant of Richard Heckscher & Sons Company, Swedeland, Pa. They are now at work installing the same kind of machines at the furnace plants of the Warwick Iron & Steel Company, Pottstown, Pa., and Joseph Wharton, Port Oram, N. J.

The Webster Mfg. Company, Chicago, have closed contracts for elevating, conveying and power transmission machinery with the following parties: Sandusky Portland Cement Company, Syracuse, Ind.; Northampton Portland Cement Company, Stockertown, Pa.; Borchert Molding Company, Milwaukee, Wis. The company have recently installed a number of Pridmore machines for their molding department, and are now manufacturing a full line of sprocket chains.

The McKiernan Drill Company, 120 Liberty street, New York City, have purchased the property in Dover, N. J., known as the Dynamo Factory. The building is a modern structure, 80 x 150 feet, situated on the New Jersey Central Railroad, a siding from which runs into the yard. The plant is being put into complete repair and is being equipped with new machines, tools, &c., of the latest design, especially adapted to the building of rock drills and air compressors, to which line of business the company confine their entire attention. The works have previously been located at Paterson and Newark. On February 1 the company will start their new plant with a force of from 50 to 75 men and with every facility for the manufacture of their McKiernan drills and air compressors.

The Cleveland Punch & Shear Works of Cleveland, Ohio, are receiving a great many inquiries for their machines, and some of them have developed into orders within the past few days. Among the latter is an order for one 50-inch rotary planer from the Carnegie Steel Company of Pittsburgh, Pa. The works have shipped within the past few days the following tools: One special I-beam punch, one 16-foot radial drill and one bending and straightening machine to McMath & Colburn, Walkerville, Ont.; one double 48-inch throat punch to the Eastern Ship Building Company, New London, Conn.; one 50-inch rotary planer to the Rochester Bridge & Iron Works, Rochester, N. Y.; one 12-foot arm radial drill to the Buffalo Dry Dock Company, Buffalo, N. Y.; one double 30-inch throat punch to the Anaconda Copper Mining Company, Anaconda, Mont.; one 36-inch throat punch to the Craig Ship Building Company, Toledo, Ohio, and several other punches and shears to various parties.

John Ramsay, 12 Ohio street, Chicago, is receiving figures on a new foundry plant which he proposes to build in another part of the city and will equip with the most approved modern apparatus.

The Allston Foundry Company, successors to the Barney & Reed Mfg. Company, have removed to 620 Atlantic avenue, Boston, Mass.

The Fishkill Landing Machine Company, Fishkill-on-the-Hudson, N. Y., builders of Fishkill-Corliss engines, have built 36 large engines during the past year and there are now several large orders in hand for engines to be built. The company report the outlook for business to be extremely encouraging.

Hertzler & Zook, Belleville, Pa., steam, water and gas engineers, are erecting a foundry and machine shop. The new plant will be equipped for the manufacture of machinery.

The Stevenson Company, Wellsville, Ohio, who recently incorporated, succeed Stevenson & Co., and will be conducted under the same management and along the same lines as heretofore, building and equipping complete brick and sewer pipe plants and constructing engines, boilers, &c. They report their business for the past year to be the best in the history of the company.

The York Mfg. Company, York, Pa., manufacturers of ice making and refrigerating machinery, are laying the foundation for an annex to their already large foundry. The addition will be utilized as a foundry and core room. The company have purchased three properties on West Philadelphia street, the rear of which will be used by the company at present for the storage of flasks and castings.

The Carleton Foundry Company, Hartford, Conn., have increased their capital stock from $25,000 to $35,000 and the number of shares from 250 to 350. The entire increase of capital has been paid in in cash. The growth of the company's business compelled them to enlarge their facilities, hence the increased capital.

The Turner Machine Company, Danbury, Conn., manufacturers of felt hat labor saving machinery, have purchased the factory, patterns and patents of the Yule Machine Company of Newark, N. J., located at 28-38 Eagle street. Some time ago the Turner Machine Company came into possession of the Yule & Carley Company, so the recent purchase makes the company the owners of two plants in Newark. As soon as the necessary alterations are made the two plants will be united. The former company are incorporated with a capital of $875,000 and operate two large factories in Denton and Stockport, England. They have, during the past year, absorbed the plants of the Eden Machine Company, Heim Machine Works and the Peck Mfg. Company of Danbury, all of which have been consolidated and are now being operated in conjunction with their main factory in that city.

The Independent Machine & Tool Company have been established at Meriden, Conn., and are manufacturing lathe chucks. Some time ago the nucleus of this business was moved from West Stafford, Conn. (being the old Washburn chuck plant), to Hartford, Conn., and there operated as the Hartford Machine & Tool Company. It has now been located in the buildings formerly occupied by the Meriden Bronze Company, which real estate has been purchased by the new company. Already they have a new independent chuck on the market and advise us that they will soon have capacity for producing them in quantity. W. M. Waite is general manager.

The Chester B. Albree Iron Works, Allegheny, Pa., operating ornamental iron works and patentees and manufacturers of the Pittsburgh riveter, have recently taken orders for quite a large number of machines, which they are now making, including three 26-inch riveters for export to Germany; one 86-inch riveter to drive 1½ inch diameter rivets for Christiania, Norway; two specially designed 36-inch alligator riveters to drive 1⅛-inch diameter rivets for the New York Ship Building Company; two 102-inch riveters, with automatic plate closing devices, for Colorado; one 18-inch standard bridge riveter for the Haskell, Barker Car Company of Michigan City, Ind.; one 12-foot gap stationary boiler riveter, which will weigh about 30,000 pounds and is to drive 1¾-inch diameter rivets, requiring a pressure of 300,000 pounds, for the marine boiler works of Heipershausen Brothers of New York City. In the constructional department they have under contract three large mill buildings and have on their books orders aggregating nearly 25,000 feet of bridge railing. The forge department is filled up ahead with orders for the next two months, and the prospects for a good year are very bright.

The Winslow Brothers Company, Chicago, who are adding to their line the manufacture of elevators, have secured the property of the Excelsior Iron Works, 100 North Clinton street, and will use it for that purpose. The building is four stories high and is conveniently located for railroad transportation.

The Marshall & Huschart Machinery Company, machine tools, 62 and 64 South Canal street, Chicago, have reorganized, increasing their capital stock from $50,000 to $100,000. The new stock is equally divided between A. Marshall, F. M. Huschart and A. Ransom. Messrs. Marshall and Huschart were the principal stockholders previously. Mr. Ransom has been connected with the company for a number of years. The officers are as follows: President, A. Marshall; vice-president, A. Ransom; secretary and treasurer, F. M. Huschart.

The Edward P. Allis Company, Milwaukee, are completing engines for the power houses of the following parties: Northwestern Elevated Railway Company, Chicago; Edison Company, Cincinnati; Toledo Traction Company, Toledo, and a 5000 and 8000 horse-power engine for the Chicago Edison Company, Chicago. The last two engines will be the largest ever installed in Chicago. The Allis Company have purchased ground and are considering plans for additions to cover a space of over 1000 acres. The capacity of the present plant will be increased 300 per cent. if the present plans are carried out.

The Borden-Selleck Company, Chicago, are completing coal and ash handling machinery for the St. Louis Refrigerator Company, St. Louis, and for the Evansville Cotton Mfg. Company, Evansville, Ind.

The A. L. Ide Engine Works, Springfield, Ill., are doing a good export trade. They recently sent two engines to Glasgow, Scotland, where they will appear in the exposition to be given there this coming summer. The engines will arrive in time to be in place at the opening in May. Two more of the engines have been shipped to Rome, where they are to be put into use in a large factory. The trade with Japan, which was growing to large proportions, was somewhat impaired by the Chinese war

and it has not regained the lost ground. Some engines are also being shipped to Mexico and Brazil.

A. J. Shaw has entered into partnership with C. W. Crickler and the plant at Bridgeton, N. J., known as the Crickler Mold Works, will be considerably improved. Several new machines will be installed and the new firm will have a thoroughly up to date plant for the manufacture of machine molds.

The Sullivan Machinery Company of Claremont, N. H., manufacturers of quarrying and mining machinery, are putting in a new steam and electric light plant, also new automatic sprinklers through their entire plant, all of which is contracted for and under way. Dean & Main of Boston are the engineers.

The work of repairing the foundry of Van Bergen & Co., Limited, Carbondale, Pa., founders, machinists and plumbers, which was damaged by the explosion of a boiler on November 18, 1900, has been fully completed. That part formerly used as a boiler room will be converted into a brass shop, having been rebuilt for that purpose. The firm do not expect to replace the boiler, as they have already put in two large Wagner electric motors, one of which will furnish power to operate the machine shop and the other will be used for the foundry. The works are in full operation, and, considering the amount of damage caused by the explosion, the loss of time was very small.

The United States Mfg. Company of Pittsburgh have placed an order with J. D. Lyon & Co., mechanical engineers, Park Building, Pittsburgh, for a 100 horse-power Miller improved gas engine.

The Pennsylvania Malleable Iron Company have removed their offices from the Park Building to the works at McKee's Rocks, Pittsburgh.

The Water Committee of Allegheny, Pa., have given a contract to the Epping-Carpenter Company of Pittsburgh for the new pumping engines for the Howard Street Pumping Station, at their bid of $11,108.

Wm. Tod & Co. of Youngstown, Ohio, have been awarded a contract by the American Steel & Wire Company for a 47 x 72 inch return crank blowing engine, to be installed at the Cleveland Rolling Mill Company's plant, at Cleveland, Ohio.

The Fore River Engine Company, Weymouth, Mass., steel ship and marine engine builders, have established a new shipbuilding plant at Quincy Point, which covers an area of about 70 acres, and is equipped for the construction of the largest class of vessels.

At a meeting of the National Elevator & Machine Company of Honesdale, Pa., last week, the following directors were elected: William Connell, Henry Belin, Jr., Luther Keller, Alfred Hand and Conrad Schroeder of Scranton, and W. B. Holmes and W. W. Wood of Honesdale. Alfred Hand was elected president; J. S. McAnulty, secretary and treasurer, and W. W. Wood, general manager. A dividend of 10 per cent. was declared out of the earnings of the company. The works at Honesdale have been materially enlarged and improved during the last year.

The Wellsville, Ohio, Improvement Company have signed a contract with the Carroll-Porter Boiler Company of Pittsburgh for a location for their plant, and it is stated that work will commence at once. The main building of the plant will be 80 x 400 feet, with an outer steel building, 50 x 100 feet. They will manufacture riveted steel pipe and large steel tanks. They have recently filled contracts for 8 miles of 4-foot riveted steel pipe for Bedford, Mass., and another order for 4 miles of 5-foot pipe for use at Duluth. Their plant at Pittsburgh is not of sufficient capacity, and will be abandoned as soon as the new plant is completed.

The Royersford Foundry & Machine Company, Royersford, Pa., have been extremely busy in all departments. Several combined punch and shearing machines have recently been shipped; one for New York City and two for nearby points. Inquiries are numerous on all lines, especially so on punch and shearing machinery and on their special foundry rumbling barrels, with which several plants have recently been equipped. General foundry and machine work is quite active, and a very satisfactory year has just been closed.

The Cleveland Twist Drill Company, Cleveland, who have recently completed several new buildings and a new power house, have found it necessary to increase the capacity of the latter, and have placed contracts with the Westinghouse Electric & Mfg. Company for a 200 kw. alternating current generator of the two phase type, 240 volts, 200 revolutions per minute and 7200 alternations, with exciter and switchboard. Theirs was one of the first factories in that section employing alternating current apparatus for driving machinery, and they have found it very satisfactory and economical.

Hardware.

The National Sewing Machine Company, Belvidere, Ill., have been running their factory 23 hours per working day for five months, yet they advise us they are continually thousands of machines behind orders. They are as rapidly as possible erecting additional buildings and equipping them with machinery. The company manufacture bicycles as well as sewing machines.

The Northwest Anchor Fence & Mfg. Company are about to build factories at Spokane and Dayton, Wash., for the manufacture of a special design of wire fencing. The organizers of the company are W. P. Russell of Spokane and D. C. Guernsey of Dayton.

The Sheldon Axe Company, Wilkes-Barre, Pa., are adding to their plant a building 550 feet long and 60 feet wide for the manufacture of carriage and wagon springs. This plant will be equipped with the latest improved and modern machinery, with a view to manufacturing springs to the best advantage, both as to cost and quality. The company advise us that they have already quite a large volume of business contracted in some of the grades. They expect to be fully equipped and running by the middle or latter part of February, and are greatly encouraged by the business that is already being offered to them.

The Atlas Mfg. Company, New Haven, Conn., manufacturers of the Bradley steel shelf brackets, &c., advise us that they are now in very much better shape to take care of orders than at any time during the past two years. They state that they were much behind in their shipments all last fall, but are now turning out a materially larger quantity of goods each week than ever before, so that they are in a position to make prompt shipments.

The Wisconsin Wire Works, Appleton, Wis., will begin operations about February 1. They advise us that they have specially designed machinery for weaving the widest as well as other widths in Fourdrinier work, and state that they have succeeded in getting a very capable force of weavers and expect to turn out superior wires. They have just placed in position a 40 horse-power boiler and a 25 horse-power engine. They will have their own electric plant.

The Frost Wire Fence Company, Cleveland, Ohio, have purchased a building site in the best portion of the manufacturing district and are preparing plans for a new plant. They expect to have about 20,000 square feet of floor space and may decide to double this figure. They report business rather quiet, but not to an extent that is usual at this time of year.

The new foundry and construction shops which are under construction for C. Hanika & Sons Architectural Iron Works at Celina, Ohio, are nearing completion, and as soon as they are ready part of the plant now at Muncie, Ind., will be moved to that point. The new plant furnishes 30,000 square feet of additional floor space. The concern are now ready to receive bids on machinery and electrical supplies. When fully equipped they will have one of the finest plants in their line.

The plant of the Bellaire Stamping Company, at Harvey, Ill., was burned on the morning of December 31, causing a loss of nearly $400,000. The cause of the fire is not definitely known. The insurance carried nearly covered the loss. It is believed that work will be commenced immediately upon the reconstruction of the plant. The company are large manufacturers of Amethyst, Dresden, Copenhagen and Columbian triple-coated enamel ware and pieced tinware.

The other day a shipment of 20 cars left the works of the A. A. Cooper Wagon & Buggy Company, Dubuque, Iowa. The shipment consisted of wagons and buggies for Colorado customers, the goods being distributed at Denver. We are advised that this is the second large shipment made by this company recently.

Among the hardware merchants who have lately equipped their stores with Heller's steel boxes are Ed. J. Walsh, Carson City, Nev.; Olney-Ijams Hardware Company, Safford, Ariz.; Hinkel & McDevitt, Atlantic City, N. J.; Chickasaw Hardware & Implement Company, Duncan, Ind. Ter.; J. L. Painter, Bellevue, Ohio; Perrine & Buckelew, Jamesburg, N. J.; W. E. Mount, Englishtown, N. J.; J. H. LeFevre, Brooklyn, N. Y. W. C. Heller & Co., Montclair, N. J., the manufacturers of these boxes, have also recently made a number of shipments abroad, including 12 dealers in England and two in South Africa.

The New Britain Hardware Mfg. Company, New Britain, Conn., during the past year have been giving their attention largely to the manufacture of set and cap screws, milled from the solid bar, and also to the manufacture of vehicle hubs for road wagons and motor vehicles, and cones for the same. This, in connection with their piano and organ hardware line, has kept them reasonably busy. They have added to their equipment by putting in a number of Cleveland automatic screw machines. The prospects for business in the coming year are referred to as excellent.

R. W. Whitehurst & Co., manufacturers of agricultural implements, Norfolk, Va., have incorporated under the style of the R. W. Whitehurst Company, with a capital of from $40,000 to $100,000. The officers are R. W. Whitehurst, president and treasurer; Joseph B. Sanford, vice-president; E. K. Bonney, secretary; George Gould and W. H. H. Trice, directors.

Cleveland Cap Screw Company, Cleveland, Ohio, have been incorporated with a capital stock of $250,000. The incorporators are D. J. Kurtz, F. E. N. Bright, H. V. Bright, J. E. Morley and W. F. Carr.

The old cut nail factory at St. Joseph, Mo., has passed out of existence. All the machinery, including the rolling mill, has been removed, and the building will probably be torn down, so that the site can be used for other purposes.

C. J. Kimball Company, Bennington, N. H., manufacturers of solid steel drawing knives, shoe, butcher and kitchen cutlery,

screw drivers, &c., have completed repairs and additions to their factory, and are now running at full capacity. We are advised that the sale of their line of butcher knives has had a particularly large increase during the past year. The Messrs. Kimball are practical men and personally supervise details of the manufacture of their goods.

The G. White Axe Company, Honesdale, Pa., who were reorganized in October, 1899, advise us that they are having a heavy demand for their hand made axes and that the outlook for business during the year is very gratifying.

The Champion Blower & Forge Company, Lancaster, Pa., report a steadily increasing business in their lines of blowers and forges. A new erecting shop, 100 x 40 feet, has been built, additions made to the foundry and the general equipment of the plant increased about 25 per cent.; this enables them to keep pace with the growing demand for their goods. Inquiries, both foreign and domestic, have been very active; extensive shipments of blowers and forges have been made to England, Russia and other foreign countries. The domestic trade has been quite heavy and shipments are being made to all parts of the United States.

The Union Lock & Hardware Company, Lancaster, Pa., are building a new two-story brick office, 20 x 25 feet, and will occupy same in a short time. They have also recently added a malleable iron department to their plant. Chiefly light work is being made and the present daily capacity is about 3 tons of malleables.

The Boss Mfg. Company, Kewanee, Ill., manufacturers of husking goods and workmen's heavy gloves, have increased their capital stock from $50,000 to $100,000.

The Bellaire Stamping Company, Harvey, Ill., whose plant was destroyed by fire a short time since, are now busily engaged upon their inventory and in making settlement with the insurance companies. Their annual meeting will be held on the 23d inst, when steps will undoubtedly be taken for the rebuilding of their plant.

Advices from Richmond, Ind., are to the effect that prosperity has reached a very high degree in that community, and that for the first time in ten years every available manufacturing establishment is occupied and many are being increased in size and new ones erected. The Cincinnati, Richmond & Muncie Railroad landed its first train load of freight in Richmond on the 3d inst. This is referred to as a very important item in the history of Richmond, local interests having been hindered very much on account of having but one railroad system.

Detroit Valve & Washer Company, Detroit, Mich., have purchased a factory site on the west side of Foundry street, just south of Michigan avenue. The tract is flat iron shaped, having a frontage on Foundry street of 100 feet and a depth of 130 feet. The purchase of this property was found necessary in order that the firm may establish a plant which will enable them to keep up with their orders. A brick building, 55 x 100 feet and three stories high, will be erected immediately.

We are advised that the Quick as Wink hose coupling, having been found to be a time saver in shops where compressed air is used, is now coming into general use on hose for pneumatic tools and machines. Frick & Lindsay of Pittsburgh, Pa., who deal largely in pneumatic hose, have contracted with the W. J. Clark Company, Salem, Ohio, for a continued supply of the Quick as Wink couplings for such purpose.

Cowles & Danziger Company, Detroit, Mich., announce that owing to the success which their interlocked steel barrel has met they have been obliged to increase their capitalization and remove to a much larger plant, which will enable them to execute all orders promptly. The new plant is located at Wight and Iron streets, Detroit.

The capital stock of the Fulton Iron & Engine Works, Detroit, Mich., has been increased from $100,000 to $200,000.

Miscellaneous.

The Hartford, Conn., factory on Bartholomew avenue of the Shelby Steel Tube Company of Cleveland, Ohio, the old Pope Tube Works, will be in operation again the early part of the year, though to start with a force of only 60 men will be at work. The factory shut down last February to put in improved machinery and after that work continued in a small way until July, when the works closed down altogether. The factory furnished employment to about 200 men at one time and the works were operated night and day. The company are getting all of their plants into action as rapidly as possible, and find business conditions and prospects most encouraging.

The La Crosse Plow Company, La Crosse, Wis., have just put in operation a small gray iron foundry, floor space 50 x 120, and installed a No. 2½ Whiting cupola. They expect to work about 20 molders.

The South Halsted Street Iron Works, founders and architectural iron manufacturers, have decided to remove from Chicago to the manufacturing town of North Chicago, near Waukegan, Ill. The present location is several blocks from a railroad and better shipping facilities are desired. President Adrian Vanderkloot contemplates the erection of a larger plant than the old one. The work of removal will be conducted gradually, so as not to interfere with business.

The Pressed Steel Car Company's Western plant, at Joliet, Ill., destroyed by fire December 23, will be rebuilt on a larger scale. A force of men is to be put to work at once cleaning up the ruins and preparing for the new buildings.

The copartnership heretofore existing between G. O. Miller and B. M. Sorensen, at Candy, Minn., under the firm name of G. O. Miller & Co., has been dissolved by mutual consent. G. O. Miller will continue the business.

An addition will be erected to the plant of the Love Brothers' Architectural Iron Works, Aurora, Ill. The new building will be 30 x 60 feet and will be fitted up with the latest machine tools.

The Union Wire Mill Company, East St. Louis, Ill., have been incorporated, with a capital of $10,000, to do a general wire business. The incorporators are H. A. Kreibohn, C. F. Hintze and H. J. Eggmann.

The Elkhart, Ind., Iron Works have been sold to the Reamer & Anderson Plow Company, South Bend, Ind. The latter will take possession at once and put men at work making repairs and improvements preparatory to operating the plant, which for some time has run irregularly.

The American Car & Foundry Company, St. Louis, Mo., are installing at their St. Charles, Mo., plant a complete automatic fire extinguishing apparatus to cost nearly $40,000. In addition a cistern will be built to hold 100,000 gallons of water and a pump put in with a capacity of 1000 gallons a minute.

The Reed Mfg. Company, Kalamazoo, Mich., have incorporated with a capital stock of $10,000, divided into 1000 shares, of which H. C. Reed holds 300, B. W. Raseman 300, J. E. Welborn 300 and J. B. Mason 100. The new company have succeeded to the business of and occupy the plant of H. C. Reed & Co., who for some time have carried on the manufacture of agricultural implements and machinery.

The Wolverine Motor Works, Grand Rapids, Mich., have secured the W. T. Powers three-story building on Front street. Twenty-five new machines have been purchased. The machinery is being placed and will be ready to operate in about two weeks. One hundred men will be employed in the machine shop and about 50 or 60 at the branch boat building plant in Holland.

The Lebanon Chain Works, Lebanon, Pa., advise us that owing to increased demand for their regular line of chain, together with receiving the large yearly Government contract for light vessel chain, they were forced to enlarge their plant by an addition 50 x 200 feet, in which they purpose to place appliances for side welding chain in connection with that of end welding. As there seems to be a tendency for building larger ships each year, requiring chain of greater strength, they are placing a testing machine of 600,000 pounds capacity to take the place of their 300,000-pound machine. This testing machine will be one of the two largest in this country, the United States Government having one of like capacity at Watertown, Mass. By February 1 their facilities will be such that they can furnish chain in size iron from ¼ to 4 inches diameter.

The Southern Car & Foundry Company, Gadsden, Ala., are to erect a pressed steel car works at Birmingham, Ala., with an annual capacity of 6000 cars. The plant will be of sufficient capacity to also manufacture ten wood cars per day, and work on the new buildings will be begun early in the present month.

The Harbison-Walker Company of Pittsburgh, makers of fire brick, have purchased a large acreage of mountain land from the Isett Estate in Blair County, Pa., for $16,550. The land abounds in ganister, which is used in the manufacture of fire brick.

The Riter-Conley Mfg. Company of Pittsburgh have received a contract for some new buildings for the American Steel Casting Company, at Sharon, Pa.

E. Johnson & Co., 13 North Canal street, Chicago, are completing the ornamental cast iron work for the new Girard Building, at Philadelphia, and the bridge work connecting the separate structures of the Mandel Building, Chicago.

The Nes Chain Works, York, Pa., were damaged by fire December 28 to the extent of $8500; fully covered by insurance. While the plant is being rebuilt the orders will be filled at the Schmidt works of the same company, the Standard Chain Company.

The Western Electric Company, Chicago, are erecting a new cable mill 250 feet square, on their newly acquired land, at Polk and Beach streets. The building will be of common mill construction, and will be only temporary. They have also completed and equipped their new foundry and machine shops, 50 x 160 feet, on the corner of Harrison and Jefferson streets. The company were recently awarded the contract for furnishing the new Interocean Building, Chicago, with two generators and one motor generator for the electric light and power plant.

D. C. Creese of New Brighton, Pa., has invented a railroad track mover, and is trying to locate a plant at Sharon, Pa., for its manufacture. A company with $50,000 capital have been organized, composed of New Brighton and Pittsburgh parties, and if enough stock is subscribed at Sharon the plant will be built there.

The Spargo Wire Works Company, Rome, N. Y., have increased their capital stock from $25,000 to $50,000, in shares of $100 par. Business has increased so much within the last year that they have been obliged to enlarge their plant and double their output. The officers of the company are James A. Spargo,

president and manager; C. M. Garrison, secretary, and R. T. Garrison, treasurer.

The firm of Poinier & Lester, Toledo, Ohio, dealers in foundry facings, railroad and electric supplies, have been dissolved, S. S. Lester succeeding to the business, Mr. Poinier retiring for the purpose of giving his entire attention to personal interests.

The Woodhouse Chain Works, Trenton, N. J., are adding a storeroom, 24 x 96 feet, and a large brick chain shop, which will increase their capacity 50 per cent. A large improved chain testing machine is being installed. Increased demand for the Woodhouse chains has necessitated the enlargement of their plant.

The Hopkins & Allen Arms Company, Norwich, Conn., whose factory was destroyed by fire a short time ago, have completed their new building, and most of the machinery is installed. The company expect to resume operations by the middle of the present month with a thoroughly up to date plant.

The Morava Construction Company have been incorporated with a capital stock of $50,000 by Wensel Morava, Winslow H. Foster and Burton E. Morse. They will build steel bridges and buildings, and have purchased a site for their plant on the Western Indiana belt road, near Eighty-fourth street, Chicago.

The S. Obermayer Company, Chicago, manufacturers of foundry supplies, are now working day and night. They report that they have many orders on hand and have just shipped six cupolas to various cities in Wisconsin.

J. J. Ryan Company, brass founders, 68 to 74 West Monroe street, Chicago, report a fine trade for the opening of the new year. Their machine shop and brass finishing departments are overcrowded and the trade in babbitt metals is exceptionally good, particularly their I X L and Nickel Genuine brands. The company have just put upon the market a new self closing faucet, for which they have been granted patents.

Brown Brothers Mfg. Company, formerly at Clinton and Harrison streets, are now occupying the old Eclipse Mfg. Company's plant at Campbell avenue and Twenty-second street, Chicago. They are making sidewalk lights and boiler castings, and maintain a general jobbing foundry.

The Bass Foundry & Machine Company, Lenoir City, Tenn., manufacturers of car wheels, have established a branch at Atlanta, Ga. W. H. Hudson, formerly master mechanic of the Southern Railway in that city, will have charge of the business.

The Paige Iron Works, whose plant in Chicago was burned some time since, have located at Harvey, Ill., where they are completing their new building, which is to be utilized as a machine and erecting shop. The building is adjacent to the works of the Buda Foundry & Mfg. Company and is of steel construction, being 100 feet wide and 200 feet long. Some tools of the company's former machine shop and an equipment of the latest appliances will be installed about February 1. The company will have their own power house and all tools will be driven by motor power. They will continue to make frogs, switches, crossings and special track supplies.

The Geneva Automobile Mfg. Company, Geneva, Ohio, manufacturers of steam automobiles and automobile supplies, organized January 4 with a capital of $100,000, which was all taken by local and Cleveland capitalists. The company have purchased the building formerly owned by the American Bicycle Company and occupied by the Geneva branch of that company, and are making extensive improvements preparatory to starting up January 21. The officers of the company are J. A. Carter, president; A. Thompson, vice-president; A. F. Dickinson, secretary; C. I. Chamberlin, treasurer. Mr. Thompson, formerly general manager of the Toledo factory of the American Bicycle Company, is superintendent of the works.

Thos. Scudder, Green Island, N. Y., manufacturer of the Leader spring mop handles, whose foundry was recently damaged by fire, will resume operations at once. The foundry is to be enlarged as soon as possible.

O. F. Butts and B. E. Slack have formed a copartnership and have opened an iron and brass foundry at Medina, N. Y., for the manufacture of soil pipe and fittings.

The Alabama Metal Roofing Company, Birmingham, Ala., a partnership composed of O. E. Smith, H. Williams and Edw. West, have completed their plant on Seventh avenue and Twenty-seventh street and have started up with a nice line of orders on their books. The plant is equipped with machinery of the latest type and has a capacity of 20 tons of corrugated and sheet metal roofing per day.

The Phœnix plant of the Central Foundry Company, Lansdale, Pa., which has been closed for several months past, resumed operations on January 8, giving employment to 175 men. The manager, Paul G. Rahe, reports large orders on hand which will keep the works busy to their full capacity for months to come.

The Empire Drill Company, Shortsville, N. Y., manufacturers of grain and fertilizer drills, are putting in a 125 horse-power engine, 180 horse-power boilers and enlarging their shop by the addition of a section 48 feet wide, 256 feet long, two stories in part and two stories and basement in about one-half of it. They are also putting up an addition to their warehouse 70 x 136 feet, with the capacity of storing about 1500 drills.

Cowles & Danziger Company, Detroit, Mich., manufacturers of interlocked steel barrels, who incorporated recently with a capital of $15,000, fully paid in, have purchased the business of the Cowles & Danziger Company. The new company are now moving into their thoroughly modern plant, consisting of continuous buildings 220 x 45 feet and a yard fully twice as large. Their new plant will have a capacity of 100 barrels per day.

R. H. Valentine recently purchased Earl Ramsey's interest in the Ohio Steel Roofing Company, Belle Center, Ohio, and now he and J. B. Pergrin are sole proprietors. They are getting things in readiness to resume operations in the spring.

The Dayton Electrical Mfg. Company, Dayton, Ohio, manufacturers of gas engine igniters, motors, &c., have increased their capital stock from $20,000 to $50,000. Increased business necessitated the enlargement of their plant.

The Globe Pattern Works, Indianapolis, Ind., organized in 1899, have recently incorporated with a capital of $25,000 for the purpose of extending their business. They are erecting a large shop on the Belt Railroad, east of the city, where they expect to employ 150 or 200 men, and intend manufacturing gas and gasoline engines, wire fence machines, &c. A gray iron foundry, with a capacity of from 18 to 20 tons per day, will be put in and other improvements made. They expect to be running by April 1.

The National Supply Company of Baltimore announce that they have purchased the entire plant and equipment of the Curtis Bay Brass & Metal Works of Curtis Bay, Md. This plant is equipped with machinery and tools for the manufacture of car bearings, including electric, freight and passenger; also the heaviest of engine castings. The company will pay attention to ornamental and finished brass work, including cocks, valves, bar fixtures, interior work for electric street cars, &c. They will manufacture likewise Muntz metal, bell metal, babbitt metal and solder, also composition castings. They have added this line under the head of "brass and metal department."

The Wheeling Mold & Foundry Company.—The Wheeling Mold & Foundry Company of Wheeling, W. Va., have decided to erect and operate a large foundry and machine shop for the manufacture of sand and chilled rolls, rolling mill machinery and general structural castings. As soon as details are arranged the erection of the buildings will be commenced on one of the two or three sites now under option by the company. The foundry will be completely up to date, equipped with the best modern appliances, and the machine shop will have some of the heaviest iron working tools ever built, and will be able to turn out any class of work desired by sheet or tin plate mills. In fact, the new plant will be not only equipped to do repair work of all kinds, but to build and equip sheet and tin plate mills complete. The new works will occupy about 3 acres of ground, and will have good facilities for receiving and shipping material. The present capital stock of the Wheeling Mold & Foundry Company is to be largely increased, and the additional stock is practically all placed, much of it being taken by a Wheeling concern. The Wheeling Mold & Foundry Company, at their present works, manufacture mill machinery, subway and structural castings, on which they are prepared to quote for immediate delivery. On chilled and sand rolls they are prepared to name prices for delivery after May 1.

The wages of puddlers and finishers in the puddling and bar mills in the Central West controlled by the Amalgamated Association will remain the same in January and February, as in the two previous months. The bi-monthly settlement of wages scale was made in Youngstown last week, and it was found that the average price of shipments of iron bars during November and December was a trifle over 1.2 cents per pound. The puddlers will continue to receive $4.75 per ton, and the bar mill men, heaters and rollers 61.2 cents per ton. Before the men will receive an advance the average price of bar iron for two months must be 1.3 cents or higher.

It is probable that in a short time the Amalgamated Association will throw open the non-union steel, tin plate and sheet mills in the Pittsburgh district. There are so many of these mills where the scale of the Amalgamated Association is not signed that the officials of that organization have about decided to allow their members to work in these non-union mills and still retain their membership.

The Iron and Metal Trades.

While the reports of important movements among the large producing interests are agitating the trade, they have practically no influence upon current business, since they cannot affect trade for a long time to come. Of more immediate interest is the report of negotiations between the most ambitious and substantial of recent new enterprises now approaching completion and the Tin Plate and Wire consolidations. If carried through they would mean the handling of their products by the consolidations.

There is nothing in the talk of great new combinations, the report recently cabled from London being particularly silly.

The lowering of freights from Pittsburgh is of importance. The most significant statement made in connection with the reduction is, however, that the new rates shall apply to all. It is stated, in fact, that the enforced liberality in making special rates to a growing number of shippers has had much to do with the change made.

There are indications of some weakness in the Pig Iron market, the Southern furnaces apparently being the leaders in the effort to take large businss for more distant delivery. It should be stated, however, that a little uneasiness has also developed in Eastern Pennsylvania.

No new business is being booked for export. On the contrary, merchants here are endeavoring to cancel engagements, because the Pig Iron can be sold to greater advantage at home.

It is reported that a little more tonnage is coming up in the Billet market, and it is intimated that a little later on the effort to advance the price may prove successful.

On the eve of the meeting of the Steel Rail manufacturers it is again asserted that prices will be advanced. It is argued that now that the large roads have nearly all bought, the small purchasers ought to pay more. During the week a good deal of tonnage has been placed, a Chicago estimate making it 100,000 tons. Among those who have bought are the Chesapeake & Ohio, the Gould system and the Mexican Central, and the placing of contracts by one trunk line and by important Canadian roads is momentarily expected. It is estimated that before the week is out the total tonnage booked from October 1 to date will aggregate 1,500,000 tons, including Mexico and Canada, but not including export sales.

The enormous pressure on the Plate mills continues, and both Western and Eastern mills report further commitments. So far as the Structural business is concerned, reports from the interior cities indicate a heavy flow of specifications and new contracts.

In the Bar trade the leading interests are bestirring themselves to take orders for spring delivery. It appears that before many months are over some of the contracts taken last August and September at such very low prices will be filled, and work to replace them is being sought.

Until the Europeans get over their fright, and realize how completely the situation has changed here since October, little new business can be expected in the heavier lines.

Efforts to market German Wire Rods in Canada have proved futile, because the Wire manufacturers there realize that a sharp break in Manufactured Wire Goods might follow a desertion of American Rod mills.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Jan. 16, 1901.	Jan. 9, 1901.	Dec. 19, 1900.	Jan. 17, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	*$15.50*	$15.50	$15.75	$22.75
Foundry Pig, No 2, Southern, Cincinnati	*13.25*	13.75	13.75	20.25
Foundry Pig, No. 2, Local, Chicago.	*14.75*	15.00	15.00	23.50
Bessemer Pig, Pittsburgh	*13.00*	13.00	13.50	24.90
Gray Forge, Pittsburgh	*13.15*	13.15	13.25	21.25
Lake Superior Charcoal, Chicago	*18.50*	19.50	19.50	25.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	19.75	19.75	19.75	34.00
Steel Billets, Philadelphia	21.00	21.00	21.00	37.00
Steel Billets, Chicago	20.75	20.75	20.75	nom.
Wire Rods (delivered)	**35.00**	35.00	33.00	nom.
Steel Rails, Heavy, Eastern Mill	26.00	26.00	26.00	35.00
Spikes, Tidewater	1.50	1.50	1.50	2.65
Splice Bars, Tidewater	1.35	1.35	1.35	2.30
OLD MATERIAL:				
O. Steel Rails, Chicago	**12.00**	12.00	11.00	18.00
O. Steel Rails, Philadelphia	*15.00*	15.00	16.00	21.50
O. Iron Rails, Chicago	**18.50**	18.50	17.50	25.00
O. Iron Rails, Philadelphia	**18.00**	18.00	17.50	26.00
O. Car Wheels, Chicago	**16.00**	16.00	15.50	21.00
O. Car Wheels, Philadelphia	17.00	17.00	17.00	20.50
Heavy Steel Scrap, Chicago	**12.00**	11.00	11.00	18.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.45**	1.45	1.40	2.20
Common Iron Bars, Chicago	1.45	1.45	1.45	2.35
Common Iron Bars, Youngstown	1.30	1.30	1.30	2 15
Steel Bars, Tidewater	1.40	1.40	1.40	2.40
Steel Bars, Pittsburgh	1.25	1.25	1.25	2.25
Tank Plates, Tidewater	*1.55*	1.55	1.58	2.40
Tank Plates, Pittsburgh	1.40	1.40	1.40	2.20
Beams, Tidewater	1.65	1.65	1.65	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	1.55	1.55	1.55	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	*1.50*	1.50	1.52½	2.05
Skelp, Sheared Iron, Pittsburgh	1 55	1.55	1.55	2.35
Sheets, No. 27, Pittsburgh	2.85	2.85	2.85	2.85
Barb Wire, f.o.b. Pittsburgh	2.80	2.80	2.80	3.80
Wire Nails, f.o.b. Pittsburgh	2.20	2.20	2.20	3.20
Cut Nails, Mill	1.95	1.95	1.95	2.50
METALS:				
Copper, New York	*16.87½*	17.00	17.00	16.25
Spelter, St. Louis	**3.92½**	3.95	3.90	4.80
Lead, New York	4.37½	4.37½	4.37½	4.70
Lead, St. Louis	*4.17½*	4.17½	4.20	4.67½
Tin, New York	**26.50**	26.50	25.50	26.50
Antimony, Hallett, New York	9.25	9.25	9.25	9.75
Nickel, New York	55.00	55.00	55.00	38.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago. *(By Telegraph.)*

Office of *The Iron Age*, 1205 Fisher Building, CHICAGO, January 16, 1901.

The situation in Finished Iron and Steel is very satisfactory. The mills are still well supplied with work and new business continues to come forward in goodly proportions. The railroad demand is exceptionally good. The car works are actively employed and are obliged to continually enter the market for fresh supplies of material. Railroad companies are likewise building many cars and their shops were perhaps never busier in making repairs and turning out new work. The railroads appear to be steadily doing more in supplying their own wants. The next move some of them will take is expected to be the building of bridges for their own lines. Plans have already been prepared by at least one large system for bridge shops so as to be ready for operations in case the cost of bridges should be put too high. It is expected that a slight reduction on freight rates on Southern Pig Iron from Ohio River points northward will be made the first of next month. Consumers are buying to cover their needs for the next three months. The week has shown quite a good tonnage of this character. The demand covered all kinds of Iron, including high priced brands and Lake Superior Charcoal, as well as the standard local and Southern grades. The market has been taxed to some extent by the purchase of 6000 to 7000 tons by a large local consumer for deliveries extending through March. Not more than 2000 tons of any one kind of Iron was bought, but it was found that furnace companies desired the business and made concessions on recently quoted prices. It is reported that Southern sellers made the largest concessions. Small lots are firmly held and manufacturers claim that the transaction referred to was of a special character and should not be regarded as representing the actual market. Quotations are as follows:

Lake Superior Charcoal	$18.50 to $19.00
Local Coke Foundry, No. 1	15.25 to 15.75
Local Coke Foundry, No. 2	14.75 to 15.25
Local Coke Foundry, No. 3	14.25 to 14.75
Local Scotch, No. 1	15.25 to 16.00
Ohio Strong Softeners, No. 1	16.25 to 16.50
Southern Silvery, according to Silicon.	15.50 to 16.00
Southern Coke, No. 1	15.10 to 15.60
Southern Coke, No. 2	14.60 to 15.10
Southern Coke, No. 3	14.10 to 14.60
Southern Coke, No. 1 Soft	.... to 15.60
Southern Coke, No. 2 Soft	14.60 to 15.10
Foundry Forge	13.60 to 14.10
Gray Forge and Mottled	13.60 to 14.10
Southern Charcoal Softeners, according to Silicon	15.00 to 17.00
Tennessee Silicon Pig	17.00 to 18.50
Alabama and Georgia Car Wheel	20.35 to 21.00
Malleable Bessemer	15.00 to 15.50
Standard Bessemer	15.00 to 15.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	17.50 to 18.50

Bars.—Large consumers are still pressing the mills to make more rapid deliveries. Specifications against contracts are calling for maximum quantities and the outlook is considered particularly good for the time of year. A fair volume of new business is being placed, which runs more largely to Steel than Iron, and although buyers are making strong efforts to secure lower prices the manufacturers maintain a firm front. Mill shipments of Common Iron are quoted at 1.45c. to 1.50c.; Soft Steel Bars, 1.40c. to 1.45c., and Hoops, 1.95c. base, Chicago. Jobbers report an even better demand than last week, with a general desire on the part of their best trade to cover requirements for the next 30 to 60 days. Prices of small lots are maintained at 1.75c. to 1.80c. for Common Iron, 1.60c. to 1.75c. for Steel Bars, and 2c. to 2.20c. for Hoops.

Structural Material.—No large orders have been placed within the past few days, but a strong demand for small lots is experienced by all manufacturers. A number of building projects will shortly be up for consideration, but they are not ready to be placed under contract. Considerable bridge work is also in sight. It is expected that some small bridges will be let this week by the Drainage Canal Trustees. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.65c; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.55c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c.; Angles, 1.60c. to 1.70c. rates, and Tees, 1.75c. to 1.85c.

Plates.—Manufacturers report sales for the week aggregating 6500 tons. The mills are so full of work that the situation is very strong, and an early advance in prices is expected. Jobbers are having only moderate demand at present, but beteer trade is confidently anticipated next month. Mill shipments of Tank Plate, ¼-inch and heavier, in carload lots, are quoted at 1.55c. to 1.60c., Chicago; Flange, 1.65c.; Marine, 1.75c. Jobbers quote small lots from store at 1.80c. to 2c. for Tank, and 2c. to 2.10c. for Flange.

Sheets.—Midwinter is ordinarily a period of dullness in the Sheet trade, but this year is a marked exception. Manufacturers continue to receive a good number of what would ordinarily be considered large orders, while jobbers are having an excellent demand for stock. Trade is particularly good in Galvanized Sheets. A continued demand is coming to jobbers from large buyers further West. Mill shipments of No. 27 Black are quoted at 3.15c., Chicago, while Galvanized Sheets are held at 70 and 7½ off. Small lots from stock are quoted at 3.30c. to 3.40c. for No. 27 Black, 2.40c. for No. 16, 2.30c. for No. 14, 2.10c. for No. 12, 2c. for Blue Annealed No. 10, and 70 off for Galvanized.

Merchant Pipe.—The reported decision of a large Steel company to engage in manufacturing Pipe has caused a little apprehension. Apart from this the situation is unchanged, the demand being quite fair for the season. Manufacturers' prices, random lengths, are as follows:

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
⅛ to ⅓ inch and 11 to 12 inches	59.2	46.2	54.9	40.9
¾ to 10 inches	66.7	53.3	61.9	49.9

Boiler Tubes are quiet, and although manufacturers' prices are reported to be somewhat easier, no change has yet been made in quotations on small lots from stock, which continue as follows:

	Steel.	Iron.
1 to 2¼ inches, inclusive	50	40
2½ inches	50	42½
2¾ to 5 inches	60	50

Cast Iron Pipe.—Manufacturers report increasing inquiry and a somewhat larger volumne of business coming from localities in which Pipe laying can now be done. Municipalities are reported to be arranging for more work than usual the coming season and prices of Pig Iron are maintained at their present level. It is expected that a very active buying movement will be witnessed toward Spring.

Rails and Track Supplies.—It is stated that a much larger tonnage of Steel Rails has been booked by the manufacturers of the country than at the corresponding time last year. The total business taken the past week by all makers is estimated at 100,000 tons, of which the local mills secured about one-third. Large inquiries are still under negotiation and much more tonnage will shortly be placed. The Eastern mills are securing considerable business in the West for deliveries which cannot be made by the Western mills owing to their crowded condition for the spring and summer months. The expectation of higher prices is undoubtedly causing railroad companies to enter the market more freely than they would otherwise have done. The demand for Light Rails continues very good. Heavy Sections of Steel Rails are selling at present at $26 and Light Sections at $25.50 to $28, according to weight. The demand for Track Supplies is very good, as orders are being placed for them concurrently with orders for Rails. Splice Bars are held at 1.40c. for moderate quantities, but on large lots some concession is being made. Spikes are quoted on large lots at 1.65c., but on small quantities a considerably higher price is being obtained. Track Bolts, with Hexagon Nuts, are held at 2.55c., and Square Nuts, 2.40c.

Billets.—Bessemer Billets are in light demand, but a good business is being done in small lots of Open Hearth Billets. They are selling in carload lots at $23.75 and at $28, and even higher prices in small lots from store.

Merchant Steel.—The general demand for Machinery, Spring and Tire Steel is light at present, but specifications against contracts are calling for maximum quantities, keeping the mills very busy. Large consumers of Tool Steel are placing their usual half-yearly contracts. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.75c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Old Material.—Through an accident last week, the quotations on Old Rails of all kinds were sadly mixed. The prices of the previous week should have been continued. The market has shown unexpected strength in the past few days. The offerings by the railroads have been easily absorbed at good prices instead of reductions as had been anticipated. Dealers are showing more courage and consumers also have shown a disposition to buy a little more freely. The following are approximate quotations per gross ton:

Old Iron Rails	$18.50 to $19.00
Old Steel Rails, mixed lengths	12.00 to 12.50
Old Steel Rails, long lengths	15.00 to 15.50
Heavy Relaying Rails	20.00 to 22.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	12.00 to 12.50
Mixed Steel	9.50 to 10.00
No. 1 Mill	10.50 to 11.00
No. 2 Mill	9.00 to 9.50
No. 1 Busheling	8.50 to 9.00
No. 2 Busheling	7.50 to 8.00

The following quotations are per net ton:

Iron Fish Plates	$16.50 to $17.00
Iron Car Axles	18.50 to 19.00
Steel Car Axles	15.00 to 15.50
No. 1 Railroad Wrought	14.00 to 14.50
No. 2 Railroad Wrought	12.00 to 12.50
Shafting	15.00 to 16.00
No. 1 Dealers' Wrought	11.00 to 11.50
No. 1 Country Wrought	9.00 to 10.00
Iron Axle Turnings	9.50 to 10.00
Soft Steel Axle Turnings	8.00 to 8.50
Machine Shop Turnings	7.50 to 8.00
Wrought Drillings	5.00 to 5.50

Cast Borings	3.00 to	3.50
Mixed Borings, &c	4.00 to	4.50
No. 1 Boilers, cut	9.00 to	9.50
No. 2 Boilers, cut	7.50 to	8.00
Boiler and Ship Scrap	6.50 to	7.00
Heavy Cast Scrap	12.00 to	12.50
Stove Plate and Light Cast Scrap	8.50 to	9.00
Railroad Malleable	12.00 to	12.50
Agricultural Malleable	10.50 to	11.00

Metals.—Prices are unchanged. Carload lots of Lake Superior Copper are maintained at 17½c., and Casting brands at 17¼c. Desilverized Pig Lead is quoted at 4.32½c., and Corroding, 4.42½c., in 50-ton lots.

Coke.—Continued good business is reported with foundrymen, gas works, smelters, &c., who are making contracts for the coming six months. Foundry Coke is held at $4.50; $5 for 72-hour coke.

E. S. Jackman has been appointed agent at Chicago for the Firth-Sterling Steel Company of Pittsburgh. Mr. Jackman has secured a warehouse at 53 and 55 North Desplaines street, in the heart of a large manufacturing district, and will carry a very extensive stock. The Firth-Sterling Company are building a practically new plant as an enlargement of their old works at Demmler, Pa., and will expend for that purpose about $1,000,000. They are not only independent of all other manufacturers but have behind them the prestige and resources of Thomas Firth & Sons of Sheffield, who have been making fine Steel for two generations.

T. S. Casey, 749 and 750 Marquette Building, Chicago, is sales agent for the Wrought Pipe made by the Aermotor Company in their new works at Chicago Heights, Ill. The company have built a well equipped Butt Welding plant with a daily capacity of 50 tons of Black and Galvanized Pipe, making from ½ to 2 inches regularly, but also prepared to turn out up to 4 inches. They are adding to the plant and expect in the near future to turn out a much larger output.

Frank H. Miller has withdrawn from the firm of Miller, Wagoner, Fieser & Co., so as to devote his entire attention to the Columbus Iron & Steel Company. The business will be continued by Fieser, Wagoner & Bentley, with offices as heretofore in the Wyandotte Building, Columbus, Ohio, and the Monadnock Building, Chicago. The new firm will continue the manufacture of Bessie Ferrosilicon and Silvery Iron and Hocking American Scotch and Strong Foundry Iron.

Philadelphia.

Office of *The Iron Age*, Forrest Building, Philadelphia, Pa., January 15, 1901.

Considering the somewhat adverse influences of the past 10 or 12 days, the market has developed more strength than might have been expected. There is a surprisingly good demand for Pig Iron, and deliveries continue to be taken in a way that shows either a most unusual depletion of stocks in consumers' yards or a very great increase in consumers' requirements. Nearly all the furnaces which have representation in this market are so well sold up that they are actually short for this and next month's deliveries, so that they are quite independent of any business that is not well up to full market prices. Mill Irons are, however, scarcer than any other grade, the demand for Skelp making having received a great impetus since the holidays. There is not as much urgency for Foundry Irons (relatively speaking), although prices of these are well maintained, the supply being in very moderate compass. There is also a good demand for all kinds of Finished Material; consequently prices are held with much firmness. In all departments there appears to be a great deal of confidence in regard to the near future, and while orders are readily accepted for deliveries which can be satisfactorily arranged, there is no disposition to make the slightest concession from quoted rates. On the whole, therefore, business for the year commences on a larger scale and at an earlier date than was expected, which is an agreeable surprise in view of the fact that there was some misgiving on that point.

Pig Iron.—The large increase in the output of Pig Iron, as shown in last week's *Iron Age*, was rather beyond what had been figured on, but the extraordinarily heavy deliveries more than offset any adverse feeling on that point. The expectation now is that the market can stand a still further increase without any detriment. Buyers in consequence are again taking Iron very freely. Inquiries are numerous, and some good sized lots have been bought within the past few days at full quoted rates, although some business is being postponed on account of the difficulty in getting the kind of Iron wanted in the short time specified for its delivery. Nobody has any misgivings in regard to the supply not being ample for all possible requirements, and probably without advance in prices, but a good deal of Iron will be wanted within the next 60 deys, which consumers would be glad to know can be made available within the time just mentioned. Beyond that date, of course, metal is expected to be in good supply; consequently buying is more for short dates of delivery than for those covering the period up to midsummer and beyond that time. Prices therefore are probably a little firmer for quick deliveries than they are for long dates, as in three or four months' time the output may be at the rate of 14,000,000 tons or more per annum, instead of 13,000,0000 tons, which is the present rate. It may also be of interest to note that on December 1 the estimate was something under 12,000,000 tons, and on November 1 a trifle over 11,000,000 tons, showing that under a moderate stimulus 15,000 to 20,000 tons per week can be added to the output without any perceptible strain; at any rate it can be done until the 15,000,000-ton mark is reached, which was done during the early portion of last year. The trade are well satisfied with the outlook and quote firmly, as follows, for Philadelphia and nearby points: No. 1 X Foundry, $16 to $16.50; No. 2 X Foundry, $15.50 to $16; No. 2 Plain, $15 to $15.25; Standard Gray Forge, $14.50 to $15; Ordinary Gray Forge, $14 to $14.25; Basic (Chilled), $14.75 to $15; Basic (Sand), $14 to $14.25.

Billets.—There is very little doing, but prices are steady at the prices recently agreed upon, viz.: $21 for Bessemer and $22 for Open Hearth Steel.

Plates.—There has been a very fair volume of business considering the amount of orders which are already on the books. Consumption is very large, however, and all the indications point to much heavier requirements by the consuming interests than at any former period in the entire history of the trade. Mills are all full of work and prices firm, as last quoted, viz.: Plates, ¼-inch and thicker, 1.55c. to 1.60c.; Universals, 1.55c. to 1.60c.; Flange, 1.65c. to 1.75c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—There is nothing but the same old story in this department of the Steel trade—viz., great pressure for deliveries and a very fair inflow of new orders. Prospects are quite favorable, and there is little doubt that the activity will be continued through the spring and summer months. Prices are unchanged and firm as follows: Angles, 3-inch and upward, 1.65c. to 1.75c.; less than 3 inches, 1.50c. to 1.60c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

Bars.—The demand is fair, but not as strong as it was some time ago, although prices are pretty well maintained. Some of the mills are running on Skelp, however, so there is no scarcity of work, and in most cases full time is being made. Prices are as follows for city or nearby deliveries: Refined Iron Bars, 1.45c. to 1.55c.; Steel Bars, 1.40c. to 1.50c.

Sheets.—There is no falling off in the demand, and full employment at the mills seems to be the general report. The pressure for deliveries is very urgent, and manufacturers feel very confident in regard to business in the near future and during the spring months. Prices are a shade dearer, and are now quoted as follows for best Sheets (common Sheets two-tenths less): No. 10, 2.25c.; No. 14, 2.45c.; No. 16, 2.65c.; Nos. 18-20, 3.15c.; Nos. 21-24, 3.25c.; Nos. 26, 27, 3.30c.; No. 28, 3.45c. to 3.50c.

Old Material.—There is a better feeling, and holders have no difficulty in getting a slight advance on last week's prices. Choice stock is particularly in demand and lots of 1000 tons each and upward, of strictly choice Melting Steel, have sold at over $16, delivered to nearby

mills. Bids and offers for deliveries in buyers' yards are about as follows: Choice Railroad Scrap, $18 to $18.50; No. 1 Yard Scrap, $13 to $14; No. 2 Light Scrap, $11.50 to $12.50; Machinery Cast, $14.50 to $15; Heavy Steel Scrap, $14.75 to $16; Old Iron Rails, $18 to $18.50; Old Steel Rails, $15 to $15.50; Wrought Turnings, $9.75 to $10.25; Cast Borings, $8 to $8.25; Old Car Wheels, $17 to $18; Iron Axles, $20 to $22; Steel Axles, $17 to $18.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, January 16, 1901.

(*By Telegraph.*)

Pig Iron.—After February 1 the rate on Pig Iron from the Valleys to Pittsburgh will be 75c. instead of 90c., the present rate. The blast furnace employees of the two Valleys met in Youngstown on Tuesday and agreed not to accept the cut in wages of about 15 per cent., to go into effect on February 1. On the contrary the men decided to demand an advance of 10 per cent. on that date. This, however, is only a bluff to secure a compromise. We can note several round sales of Bessemer Iron to leading interests involving considerable tonnage, and all of which goes into actual consumption. It is stated that practically all the Bessemer Iron piled up in the two Valleys belonging to Steel interests has been sold, and that future Iron must be had from the merchant furnaces. It is claimed that even with lower costs on Ore and Coke few, if any of the Valley furnaces will be able to make Iron below $12, and that some furnaces will not be able to get even that low. There is a fair demand for Forge Iron, but Foundry is dull and prices weak. We quote Bessemer at $13.25; Forge Iron at $13.15 to $13.25; No. 2 Foundry, $14 to $14.25, all f.o.b. Pittsburgh. We can note a sale of 500 tons of Gray Forge at $13.15, Pittsburgh.

Billets.—The Edgar Thomson mill is to go on Billets Sunday night. The Ohio Works, at Youngstown, will go on Rails February 1 for a three months' run. An Eastern consumer has placed an order for 5000 tons of Billets at full pool prices. The tonnage in Steel being entered by the mills is said to be getting larger. It is also claimed that the price of Billets may be advanced about $1 a ton on February 1. We quote Bessemer Billets, Pittsburgh, Wheeling and the Valleys, at $19.75, delivered. Billets smaller than 3⅞ inches are $1 extra. Carbons higher than 0.21 and up to 0.60 are $1 extra; 0.61 up to 1 are $2 extra. Basic Open Hearth Steel, $1 a ton extra over the price of Bessemer. For cutting small Billets, 50c. per ton extra.

Sheet and Tin Bars.—The activity in the Sheet and Tin Plate trade is causing an active demand for Sheet and Tin Bars. We quote Sheet and Tin Bars at $20.75, delivered, Pittsburgh, Wheeling and Valley districts. For cutting Sheet and Tin Bars, 50c. per ton extra.

Muck Bar.—We quote Standard grades at $24.50 to $25, Pittsburgh.

(*By Mail.*)

The reductions in freights on Pig Iron, Billets and Finished Iron and Steel, made last week by the railroads and which go into effect February 1, are fully given in another part of this issue. In spite of the heavy cuts which have been made by the railroads in carrying charges, Mr. Carnegie still insists they have not done what they should do and that further reductions ought to be made. This, however, will hardly be done. It is likely though that lower rates on Ore and Coke will be made by the railroads. In fact, inquiries have already gone in from large shippers asking when such reductions would go into effect. The blast furnace employees of the Valleys are meeting in Youngstown to-day and may decide to refuse to accept the cut in wages to be made on February 1. If this is done a shut down of the furnaces is possible. The volume of tonnage in the Iron trade keeps up remarkably well, and is showing a slight increase over last month. The leading mills are well filled up and prompt deliveries of certain kinds of material are hard to get. There has been no change in prices worthy of note.

Ferromanganese.—We continue to quote 80 per cent. Ferro at $62.50, delivered at buyers' mills.

Structural Material.—The American Bridge Company have taken an order from Standard Oil Company for 15 Steel derricks and the Riter-Conley Mfg. Company for ten. It is stated the Standard Oil Company use about 200 of these derricks every year, and in the future they will be of Steel. The American Bridge Company have also taken the Steel buildings for the new Chain Works of James McKay & Co., at McKee's Rocks, requiring about 400 tons. The Fort Wayne bridge has not yet been given out. A good deal of tonnage is being placed, both East and West, and both local Structural mills are filled up for some months ahead. There is no change in prices, and we quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Steel Bars, 1.25c. to 1.35c., half extras, at mill; Universal and Sheared Plates, 1.40c., all f.o.b. Pittsburgh.

Plates.—The reduction of $1 a ton in freights East may possibly lead to a slight revision in the delivered prices fixed by the association on Plates. However, there is a strong feeling in favor of an advance in prices on Plates of about $1 a ton, and this reduction in rates may possibly offset this, and the schedule of delivered prices now in force be allowed to remain. Prices fixed by the Plate Association are being rigidly held. One shipbuilding concern is said to have placed an order for 5000 tons of Plates last week for extended delivery. Tonnage is not as heavy as it was some time ago, but the mills are filled up for several months. Prices are as follows: Tank quality, ¼-inch and heavier, 1.40c.; 3-16 inch, 1.45c.; under 3-16 inch and above No. 10, 1.50c.; Flange, or Boiler Steel, 0.1c. advance over base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Bars.—There is a fair demand for Steel and Iron Bars, but not as heavy as some time since. Specifications on old contracts made when prices were lower are coming in very freely. We quote Steel Bars at 1.25c. at mill, and Iron Bars at 1.30c., Valley, equal to 1.34½c., Pittsburgh, in carloads, after February 1.

Sheets.—The Sheet trade continues very active and some mills are quoting higher prices. It is reported that some of the leading Sheet makers are sold up for first quarter and have booked a good deal of tonnage for second quarter. Prices are firm and we quote No. 27 Black Sheets at 2.85c. to 2.90c.; No. 28, 2.90c. to 2.95c. There is a heavy demand for Galvanized Sheets and prices are strong. We quote at 70, 10 and 5 per cent. off, f.o.b. at mill.

Steel Rails.—The Ohio Works of the National Steel Company, at Youngstown, are to go on Rails, February 1, for a three months' run. It is possible the announcement of an advance in prices of Rails to $27 or $28 will be made this week. We quote at $26 at mill.

Skelp.—The market continues very quiet. We continue to quote Grooved Iron Skelp at 1.50c.; Sheared at 1.55c.; Steel Skelp is very dull and there have been no recent sales in this market. We quote Grooved at 1.35c. and Sheared at 1.40c., Pittsburgh; terms four months or 2 per cent. off for cash in 30 days. It is possible on a firm order our prices on both Iron and Steel Skelp would be shaded.

Merchant Steel.—Demand shows a heavy falling off, buyers placing orders mostly for small lots. However, in Tool Steel a good deal of tonnage is being placed, and this is probably more active than anything else on the list. We quote: Plow Slabs, ¼-inch and heavier, at 1.60c., base; Tire Steel, 1.35c. to 1.40c.; Toe Calk, 1.70c. to 1.75c.; Open Hearth Machinery, 2c., base; Open Hearth Spring, 2c., base; Hammered Lay Steel, 3c. to 3.25c.; Rolled Lay Steel, 2.75c. to 3c.; Cold Rolled Shafting, 57 per cent. off in carload lots; 52 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River. Terms

are 30 days net, except Tool Steel, on which 60 days are allowed, less 2 per cent. off for cash in 10 days.

Pipes and Tubes.—Tonnage holds up remarkably well, and is about as large so far this month as last. Prices are firm, but in exceptional cases are slightly shaded by the smaller mills. Consumers in carload lots are quoted as follows:

Merchant Pipe.

	Black. Per cent.	Galvd. Per cent.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3¼ to 4 inch	63	59
4½ to 12½ inch	65	61½

Casing, Cut lengths.

	S. & S.	I. J.
2 to 3 inch	53½	49
3¼ to 4 inch	59	55
4½ to 12½ inch	61½	57½

Boiler Tubes.

	Up to 22 feet. Per cent.
Steel.	
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	68½
2 inch to 2½ inch, inclusive	63
6 inch and larger	62
Iron.	
1 inch to 1½ inch and 2½ inch	49½
1¾ inch to 2¼ inch	45
2¾ inch to 13 inch	57

Jobbers are quoted 5 per cent. or more lower than the above prices.

Coke.—Fully 80 per cent. of the productive capacity in the Connellsville region is active, and it is probable more ovens will be blown in before long. The Coke trade has shown marked improvement in demand in the past two or three weeks. Prices, however, are no better, and we hear of contracts being taken for both Furnace and Foundry Coke at low figures. We quote strictly Connellsville Furnace Coke at $1.75 a ton, but it is stated this price has been shaded in some cases. We quote 72-hour Foundry Coke at $2.25 a ton. Main line Coke made outside the Connellsville region is quoted at much lower prices than the above.

Iron and Steel Scrap.—There is nothing of interest to note. The market is dull and prices are weak. We quote: No. 1 Railroad Wrought Scrap, $14.50 net ton, f.o.b. Pittsburgh; Old Iron Rails, $18.50 to $19 Pittsburgh, and $19.50 Valley, gross ton; Old Steel Rails, $14 to $14.50 gross ton; Busheling Scrap, $12 gross ton; Turnings, $7 net ton; Cast Iron Borings, $6 net ton; Old Horseshoes, $13 gross ton; Heavy Melting Stock, $13 to $13.50 gross ton.

The Kane-Maloney Iron & Steel Company of Pittsburgh have been organized with a capital of $5000. The concern have offices in the Park Building, in that city, and are dealers in Iron and Steel Scrap.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets, Cincinnati, January 16, 1901.

While it goes without the necessity of elaborate proof that the general condition of the Pig Iron market is good and trade is standing just on the verge of another extensive buying movement, yet the market shows up this week in a weaker condition, and quotably lower than the figures ruling seven days ago. There are many furnace managers who think that the cut in prices was unwarranted, and they feel aggrieved at the turn things have taken, but the hard fact remains that a material cut has been made. Last week's report showed Gray Forge and kindred Irons to be the only weak spot in the entire market, and now it has developed that this condition has pulled the entire market down a notch or so. While some Iron has been sold 25c. below the minimum figures given herewith, yet it is stoutly maintained that these selling prices were subject to conditions which would make it unfair to quote them as a standard for regular trading. Southern Gray Forge, Nos. 3 and 4 Foundry have been sold on the basis of $9, $9.25 and $9.75, Birmingham, and as a consequence the furnaces making these prices have had to make a nominal quotation of $10.50, Birmingham, for No. 2. There has been a good increase both in trading and in inquiry over the week preceding, and unless the break in prices causes buyers to hold off there will be some good buying throughout the coming week. The harmony of quotations which has existed from the past month has given place to a badly mixed state of affairs and a gap of about $1 now separates the two extremes. It is anybody's guess as to where the market will stand next week. It ought to be strong, and yet it looks weak. Freight rate from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$14.00 to $14.25
Southern Coke, No. 2	13.25 to 13.50
Southern Coke, No. 3	12.75 to 13.00
Southern Coke, No. 4	12.25 to 12.50
Southern Coke, No. 1 Soft	14.00 to 14.25
Southern Coke, No. 2 Soft	13.25 to 13.50
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	17.00 to 17.50
Ohio Silvery, No. 2	16.00 to 16.50
Lake Superior Coke, No. 1	15.50 to 16.00
Lake Superior Coke, No. 2	14.50 to 15.00
Lake Superior Coke, No. 3	13.50 to 14.00
Southern Basic	.... to 14.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades	$18.75 to $19.75
Standard Southern Car Wheel, No. 2	17.75 to 18.75
Lake Superior Car Wheel and Malleable	19.00 to 20.00

Plates and Bars.—The market is fairly active and steady on an unchanged basis. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.45c., half extras; in small lots, 1.75c., with full extras; Steel Bars, in carload lots, 1.40c., with half Steel card extras; Base Angles, in carload lots, 1.50c. to 1.55c.; Plates, 1.55c. for ¼-inch and heavier; Sheets, No. 1, 1.95c.

Old Material.—The market is quiet and fairly steady. Dealers' buying prices per gross ton are, f.ob. Cincinnati: No. 1 Wrought Railroad Scrap, $15; Cast Railroad and Machinery Scrap, $11; Old Iron Axles, $16.75; Iron Rails, $18; Steel Rails, rolling mill lengths, $13; short lengths, $12; Car Wheels, $15.

Cleveland.

Cleveland, Ohio, January 15, 1901.

Iron Ore.—At a meeting of the Lake Carriers' Association in Detroit this week an effort will be made to relieve the vessel owners of the burden of the unloading charges for cargoes of Iron Ore, the shippers paying the bill. It is hardly possible that anything will be done other than the appointment of a committee to see that some measure of this sort is introduced into the next agreement between the dock managers and the International Longshoremen's Union. This proposition grows out of the clause in the Rockefeller-Carnegie agreement, by which the former carries the Carnegie Ore at 50c. per ton, and the latter assumes the charges for loading and unloading. Aside from this the midwinter dullness prevails in Iron Ore matters. All are waiting for the call for a meeting of the Ore Association, which has not been issued.

Pig Iron.—There is a better tone generally to the Pig Iron market this week, the conditions which have prevailed since the holidays giving place to a more active period. The sales have been heavier, but the feeling has been mostly indicated by inquiries, which show that a good volume of business is in sight. While the market is brisk and prices are strong, there is an undercurrent of caution, as the sales do not extend beyond the time that is likely to see a change in prices caused by the new price of Ore. For the first half of the year furnace capacities have been pretty well sold up, prompt deliveries being increasingly harder to obtain. The inquiries even extend to the Bessemer Irons. There is some talk of blowing in the idle Bessemer furnaces, but it has developed into no certainty so far. Prices have not changed. Foundry Irons are quoted, Nos. 1 and 2 at $14 and $13.50 respectively, Valley furnace. Basic is still holding at $13.50 and off Basic at $12.50. Bessemer is nominally holding at $13.50.

Finished Material.—The outlook is better in the Finished Material market than it has been for several weeks, although there has been no time when this branch did not excel the others. The inquiries coming in have been heavier this week than in the recent past,

and there has been a constant flow of small orders that aggregated a very satisfactory business. The leaders continue to be Structural Material and Steel Rails, the latter having taken a spurt in the last week that amounted almost to a boom. There are inquiries on the market now for upward of 7000 tons of Structural Steel growing out of projects for new buildings in this city. It is expected that nothing will come of a few of these projects, but several orders are about ready to be placed and will be closed within the week. The tonnage of Beams and Channels has been splendid. A good bit of this is accounted for by the amount of bridge work which is being done. The prices on Shapes hold firm, 1.50c. being paid on Beams and Channels and 1.40c. on Angles, with no disposition apparent to break or advance the price. Steel Rails have been one of the leading features. Up to this time the tonnage had been about equal to that of a year ago, but improvements are noted. Some of the steam lines are still holding off, while the electric lines have been buying heavily. The Steel mills have intimated a possible advance in the price, although this is seriously questioned. If results were aimed at in this announcement the subterfuge has been successful, for orders that were being withheld are now being placed. The hinted advance was followed immediately by a number of orders, both from steam and electric lines, that were very satisfactory, and the result was that the tonnage was placed slightly in excess of that for the same period last year. Other orders are in sight which will be closed soon. Recently sales amounting to 30,000 tons and upward have been made, the Rails going to electric lines either in process of construction or to be built soon in Northern Ohio. Some of the larger mills are announcing that the capacities on Bars and Plates have been sold up for six months ahead. Others say that deliveries short of ten weeks is impossible. Notwithstanding this condition there is a strong demand for Plates, and especially those used in ship construction, the American Ship Building Company being the heaviest buyers. This week has seen orders for 600 tons of Billets placed. A report has been circulated concerning a possible advance, but nothing of the sort has made its appearance. Bessemer Billets, 4 x 4, are still sold at $19.75, and Open Hearth, small sizes, at $22.50.

Old Iron.—The market is still in an unsettled state as concerns Scraps, but, as in other branches, there is a better demand. No big sales have been made that would make possible an accurate quotation of the market. To all intents, however, the prices have not changed from what have been quoted for the last few weeks. These prices, however, are purely nominal.

St. Louis. (*By Telegraph.*)

Office of *The Iron Age*, 1205 Chemical Building, St. Louis, January 16, 1901.

Pig Iron.—Inquiry is more numerous, but not enough to arouse any great interest in the Pig Iron market. This business being done in a small way and occasionally negotiations are closed for a large lot. It is admitted that the market is rather quiet, but as the foundry interests are very active renewed buying is expected to take place within the next few weeks. Prices, as quoted below, are said to be steady, but it is also reported that some shading is taking place. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.75 to $15.00
Southern, No. 2 Foundry	14.00 to 14.25
Southern, No. 3 Foundry	13.50 to 13.75
No. 1 Soft	14.75 to 15.00
No. 2 Soft	14.00 to 14.25
Gray Forge	13.00 to 13.25

Bars.—Mills state that orders for an increasing tonnage are being received from jobbers. The latter have not bought very extensively since December 1, but are now replenishing their stock, which has been much broken lately. No speculation is indicated in orders so far received. The makers of Steel Bars whose order books are well filled are holding to higher figures than named below. Somewhat lower quotations from independent concerns are also reported. Mill prices for both Iron and Steel in heavy tonnage are 1.45c. to 1.50c., half extras, East St. Louis. Jobbers' price on less than carloads is 1.75c. to 2c., full extras.

Rails and Track Supplies.—Miscellaneous railway supplies are in particularly good action, some makers being under necessity of running two shifts. Light Rails are in brisk demand, no particular inquiry existing for Standard Rail. The open weather has rather increased business. Strong inquiry is noted for Track Supplies and orders covering needs for spring repairs are being received. We quote Splice Bars 1.50c. to 2c., Bolts, with Square Nuts, 2.30c. to 2.40c.; with Hexagon Nuts, 2.40c. to 2.50c.; Spikes, 1.70c. to 1.80c.

Pig Lead.—Market dull and unchanged. We quote Common Missouri 4.17½c.; Chemical, 4.20c.; Desilverized, 4.32½c. Lead Ore brought $46 per ton.

Spelter.—Very little doing. Scattering inquiry only. Some large consumers said to have quietly bought for nearby needs. Quotable price is 3.92½c. to 3.95c. Zinc Ore values reduced about $1. Top price $27 per ton.

The old firm of Stevenson, Field & Co. having been dissolved, the business in St. Louis has been reorganized under the name of C. A. Stevenson Pig Iron & Coke Company, with main offices at 307, 308 Bank of Commerce Building, St. Louis, Mo. All unfinished business will be closed up by the receiver for the old firm, who have been dissolved, and in their place C. A. Stevenson Pig Iron & Coke Company will do business with principal offices in St. Louis, and the new company are incorporated for $20,000 for the purpose of handling and selling on commission or otherwise Pig Iron, Coke, &c. E. H. Stevenson is president and treasurer, A. B. Stevenson secretary, and C. A. Stevenson, who was the senior member of the old firm, has been appointed general manager for the new company.

Birmingham.

Birmingham, Ala., January 14, 1901.

The trade in Iron the past week, while not active, showed a material increase over that of the preceding week. There were some solid inquiries from large buyers which failed to eventuate in transactions, as the parties withdrew when they could not dictate prices. The demand was for both Foundry and Mill Irons, the former predominating. Very few inquiries are coming for Basic Iron, as it is well understood in the trade that the output of that grade here is well sold up for months to come. No. 2 Foundry sold at $11.25 on order lots, according to quantity, while important orders were accepted at $11. Some No. 1 Foundry Iron went at $12.25, but not in important quantities. No. 2 Soft is notched at the $11 mark, and some of it went at that price. It is hard to report with certainty the price of Gray Forge and No. 4 Foundry. They are quoted at $10, but there is circumstantial evidence that $9.75 was accepted. It is charged that $9.50 was the price on more than one order, but your correspondent could obtain no confirmation of it. One favorable feature of the situation is the fact that some lots were sold to Eastern Atlantic States. For the past few months the Pennsylvania and Virginia furnaces have stood as a barrier between us and monopolized that trade. But it is coming back now and some orders were accepted, one being for 1000 tons No. 2 Foundry, 500 of which was for immediate shipment. At the close of the week one interest were figuring on 10,000 tons and felt indifferent about buyers' acceptance. All sales agents in buying markets still take a roseate view of the situation and predict a large business for the immediate future. Everybody has been educated to expect it. The increase in production and the nominal reduction in stocks is accounted for by the fact that demand has not yet recovered from its Christmas somnolence. It is encouraging to note the firm demand for Steel, as it is a matter of regret to record that important business has to be declined because of inability to comply with deliveries. The past week orders that were acceptable and aggregating 30,000 tons were declined. The mill capacity is gradually and steadily growing, but does not keep pace with the demand for its product.

In Merchant Iron there has been an advance of $1 per ton, with quite an active demand, which, because of its steadiness, gives the market a healthy appearance.

The outlook in this branch of the Iron trade is regarded as very encouraging.

The manufacturers of Pipe are in the midst of a fine harvest. The Dimmick Pipe Works are crowded with business. Their books show orders from both the Pacific and Atlantic coasts, from Mexico, from points in the West, as also from the South. The management report a rush of business with a fine prospect for an increase.

The export trade excites no attention, as the possibility of doing anything in that direction is nil.

More than two years ago these letters called attention to the possible value that might attach to Furnace Slag, which never had been anything but a waste product, and pointed out the Basic elements it contained for the manufacture of a cheap commercial fertilizer. A series of experiments has developed a formula which has been practically and successfully tested, and the product will be manufactured and marketed under the name of Brainite. The Slag does not contain all the elements necessary for a good fertilizer, but what is lacking can be easily supplied by local make and readily combined with the elements in the Slag. The Slag can be used either hot or cold by the process, and as its cost at the factory is almost nominal, the market price of the new fertilizer will not be over half the price now existing for commercial fertilizers. The owner of the process is now here to secure a site and to form a local corporation as a mere formality. He informs your correspondent that New York capital is backing the enterprise, and when arrangements are perfected a plant will be erected here which, when in operation, will have cost a large sum of money, employ 300 workmen and turn out 500 tons of fertilizer daily. The programme is to erect a similar plant at Sparrow's Point, Md.; Copley, Pa.; Chattanooga, Pa., and Iron Mountain, Mo. If successfully launched and conducted the enterprise will be in the nature of a public benefaction. The expressed intention is to be ready to enter the market in time for the crop of 1902.

There are other enterprises yet knocking at our door, anxious, yet doubtful. The latter feeling is growing less and less, and by spring we will begin to announce the arrival of new industries.

The interest in Ensley City continues unabated. Houses cannot be built fast enough to shelter the employees of the various industries. The Ensley Land Company, to relieve the strain, have concluded to build a number of houses themselves, for sale or rent. Every building contractor has his hands full, and the life of the dealer in building material is made miserable by importunities for immediate attention. Never in the history of the district has there been such activity in building as now prevails. Birmingham herself, as a municipal corporation, has caught the fever. Besides our new City Hall, to cost $250,000, on which progress is being made, three times that amount will, within a year, be spent in opening, widening, paving streets, &c. To provide the means for such radical improvements the Legislature must enact certain laws authorizing increased taxation. That will be done, and then we can always be on dress parade to admiring visitors.

The demand for Coal is simply furious, and it cannot be promptly and fully met. It looks as if though the supply was twice what it is it would be rapidly absorbed. One cause of supply being under demand is the number of Coke oven batteries built in the last 18 months, and their building has not yet ceased. The Louisville & Nashville Railroad has been bringing Coal for its own use from Kentucky mines. The Coal operators are enjoying a season of prosperity this year. But comparatively little Coke goes from the district, the greater part going to industries in the district.

There are some mineral investigations and developments going on which promise, so far, great results. But until indisputable verification by standard, practical tests justifies it, caution counsels prudence in speech.

The mineral field of the district has not been gleaned. It has simply been skimmed.

German Iron Market.

ESSEN, December 27, 1900.—The year 1900 will go into history as the most extraordinary in the German Iron and Steel industry. The rapid development which it enjoyed during the last two or three years culminated in the beginning of the spring of 1900. The reaction which occurred at this time in the American market caused a pause in the international market. This was followed by a break in the European stock exchanges, which in turn reacted vigorously upon the Iron works. In view of the unprecedentedly heavy orders carried by the mills this effect caused a surprise to all interests, and even today a good many leaders adhere to the opinion that there was no ground for the sudden stop in the steady development which the German Iron industry has experienced during the last decade. These people hold still that it is only a temporary check.

A glance at the production of Pig Iron shows that while the increase during the previous years was very large it did not amount to more than 200,000 tons in 1900. The production of Pig Iron in Germany rose from 6,373,000 metric tons in 1896 to 6,881,000 tons in 1897, 7,313,000 tons in 1898, and 8,142,000 tons in 1899. The returns for the first ten months of 1899 and 1900 are respectively 6,719,843 tons and 6,920,934 tons, thus indicating for 1900 an output of 8,342,000 tons.

While it is true that the Steel works may possibly be able at the present time to produce more than the consumption calls for, yet the output may be readily brought to the required level by a moderate restriction. This may be attained readily since the German Iron industry is controlled by syndicates. It so happens that during the last few weeks the promotion of further syndicates and the prolongation of present pools has made good progress. Since the last report to *The Iron Age* the Billet and the Beam syndicates have been renewed for three years. This is of special value to the market because the new great Steel works of Lorraine and Luxemburg have joined the Billet syndicate; previously they were not members of it. It may be noted furthermore that the negotiations for the formation of a Sheet syndicate have excellent prospects, and that the Bar Iron mills have lately taken steps to form a pool. Until lately there was only an association for Iron Bars, while the sharpest competition existed in Steel Bars.

In spite of the increased perplexities in the Iron market the demand for Coal has not alone not receded, but has increased. Furthermore, November was the record month for production. The Royal Prussian State railroads have covered their requirements for Locomotive Coal for the year 1901 with the Coal syndicate at the price of 11.10 marks. Besides, the renewals of contracts expiring on April 1 with other consumers are going on steadily, a proof that neither producers nor consumers count upon any lowering of present prices.

So far as the Iron industry is concerned, there is a slight tendency toward improvement in some branches, but the general position is still quite unsatisfactory. It could not very well be expected that business would develop close before the end of the year, and usually the last two months show a decline in the demand. Nothing has happened in the Ore market, nor is anything worthy of note to be reported in the Pig Iron market. Foundry Iron is being taken steadily for immediate requirements, while the other grades are being piled up until the consuming mills resume operations. Prices remain as follows: German Foundry No. 1 and Hematite, 102 marks; No. 3, 98 marks; Bessemer Pig, 102 marks; Thomas Pig, 90.20 marks; Spiegeleisen, 110 marks; Special Mill Iron, 90 marks.

Inquiry has improved somewhat in Steel, although there are few transactions at the price now demanded by the syndicate of 115 marks. Demand is lifeless in Muck Bars, so that this material, which a few months since was very scarce, is now in ample supply. Old Material is being offered liberally, particularly by foreign dealers. Prices, however, have improved somewhat, and Open Hearth Steel Scrap is quoted at 47 to 48 marks; Heavy Rolling Mill Scrap, 59 to 60 marks, and Melting Iron, 38 to 39 marks.

In Finished Iron and Steel the feeling is very depressed. There is not very much work, and if the conditions now prevailing continue for any length of time the smaller mills which do not produce their own Steel will be unable to run. Steel Bars are quoted 125 marks, while Iron Bars are 130 to 140 marks. When it is taken into consideration that rolling costs about 30 marks per ton, and that Steel Billets cost 115 marks and in some cases 130 to 135 marks on old contracts, it will be appreciated under what conditions work is going on.

There is little business coming up in Hoops, the official price being still 195 marks. However offers down to 135 marks are being made. Very little new work is coming up for the Pipe mills, and then it is chiefly a question of Boiler Tubes. The hope is expressed, however, that with the approach of spring there will be more activity in building to bring out a demand. The same is true of Beams. While during the last few weeks some orders have come in, they must be received in very much larger volume before adequate employment is secured. In the Plate trade specifications are being received more liberally. This is particularly true for Locomotive Boilers and Frame Plates. In other branches some orders have been received from abroad. So far as Sheets are concerned, the home buyers are still holding off, while good orders have come from abroad. Prices are still nominally 150 to 160 marks, but are soft, and offers down to 135 marks are said to have been made. So for as Wire Rods are concerned the syndicate has reduced the price to 150 marks, and in doing so has gotten back to the figure prevailing in the middle of 1899, the price having been raised to 175 marks in August, 1899, and to 185 marks in December, 1899. Orders for Wire Nails are coming in very slowly, and all of them are for immediate delivery. Some inquiry is noted in Japan Nails.

Car works expect large orders from the State railroads at an early date. This will secure to them work for months to come. At the present time business is slack. Machine shops and Iron foundries which have been suffering so far as profits are concerned from high prices of raw material are still fairly well employed, but in some branches, notably in Machine Tools, a decline in inquiries is much noted.

New York.

Office of *The Iron Age*, 232-238 William street, New York, January 16, 1901.

Pig Iron.—While the market is steady for prompt delivery, there is a disposition to shade prices on larger blocks for forward delivery and an increased anxiety to sell. In this the Southern furnaces are leaders, although some interests in Eastern Pennsylvania are also offering. The market is not, however, quotably lower and we note: Lehigh, Schuylkill and Virginia Irons, No. 1, $17 to $18; No. 2 X, $15.50 to $16; No. 2 Plain, $14.25 to $15; Gray Forge, $14.25 to $15; Tennessee and Alabama brands, No. 1 Foundry, $15.50 to $16; No. 2 Foundry, $14.50 to $14.75; No. 1 Soft, $15.50 to $15.75; No. 2 Soft, $14.50 to $14.75; No. 3 Foundry, $14 to $14.25; No. 4 Foundry, $13.50 to $13.75; Gray Forge, $13.50 to $13.75.

Cast Iron Pipe.—The largest order recently taken is that for 2200 tons for Middletown, N. Y., taken by a foundry in the State. There is keen competition for business, although some of the usual leaders in close prices are quoting high. Quite a lot of smaller sizes of Pipe was recently closed in Philadelphia. We quote $24.50 per gross ton for 8-inch Pipe at tidewater.

Steel Rails.—Quite a fair tonnage is being placed with Eastern mills, among the recent transactions being a lot of 4000 tons for Mexico. We quote $26 for Standard Sections, $25 and $26 for Light Sections, and $32 to $32.50 for Girder Rails. We quote Spikes, 1.50c. to 1.60c.; Splice Bars, 1.35c. to 1.40c.; Square Track Bolts, 2.10c. to 2.15c., and Hexagon Bolts, 2.25c. to 2.30c.

Finished Iron and Steel.—In Structural Material no large contracts are reported. In Brass there is some disposition to secure business for later delivery. We quote as follows at tidewater: Beams, Channels and Zees, 1.65c. to 1.70c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Plate Mills, 1.58c. to 1.60c.; Sheared Steel Plates are 1.58c. to 1.60c. for Tank, 1.68c. to 1.70c. for Flange, 1.78c. to 1.90c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange and 3.25c. for Fire Box. Refined Bars are 1.40c. to 1.45c.; Common Bars, 1.30c. to 1.35c.; Soft Steel Bars, 1.35c. to 1.40c., and Hoops, 1.90c. to 2c., base, on dock.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, January 16, 1901.

Pig Tin.—Business during the last week has been very dull here and the market devoid of interest. Higher quotations from London had their usual effect and brought prices up a little on this side, but the movement was very sluggish and by the close to-day prices settled back to the figures of last week. Interesting developments are looked for in this metal, as the large American importers are working through one brokerage house, but the general trade outside of this ring are inclined to look on rather with a cautious interest than to anticipate the result of the operations. This market closed naming spot and January at 26½c., nominal. February and March were quoted 26¼c. The net advance in the London quotations amounted to £1 2s. 6d., as the closing prices named to-day were £120 for spot and £119 5s. for futures. It will thus be seen that since last week a discount of 5 shillings has been allowed on futures. It is said that the London advance is due to the squeezing of shorts. Shipments from the Straits for the first half of this month amount to 1700 tons, against 940 tons for the corresponding period of last year. Of the 1700 tons it is said that 1100 were for this country, thus increasing our afloats to that extent.

Copper.—An extreme state of dullness and inactivity characterizes this market, and the undertone is apparently a very easy one. Official quotations named by the New York Metal Exchange remain at 17c. for Lake and 16⅝c. for Electrolytic. Lake can, however, be purchased at 16⅞c. in good quantities, and Electrolytic was offered in large lots at 16⅜c. The market is spiritless, as consumers are not falling over each other with eagerness to buy, and the selling trade in general are waiting to see what the two large producing interests are going to do at their selling ends. The London market has declined from day to day, and to-day's closing prices were the lowest for the week. Spot was named at £71 11s. 3d., and three months' futures were £72 5s. Best Selected declined 10 shillings to £78 10s.

Pig Lead—Is without change in this market, as the American Smelting & Refining Company have not changed their prices. They quote 4.37½c. for lots of 50 tons and more of Desilverized, New York delivery, and 4.32½c., f.o.b. St. Louis, under the same conditions. London has declined a shade to £16 5s.

Spelter—Is very weak and declining. Spot and shipments are freely offered at 4.10c., with 4.05c. bid for small lots. The former figure is the quotation generally given for ordinary brands. The special brands are quoted 4.25c. to 4.30c. Only a small business is in sight. London is quoted £18 15s., which notes a decline of 5 shillings.

Antimony.—Hallett's has again declined ¼c., but Cookson's is still held at the old figure. We quote Hallett's 9¼c. and Cookson's 10½c. The decline in Hallett's is due to a lower London price, the market having fallen £1.

Nickel—Is not changed, the same conditions prevailing that have existed for some time. Prices are nominally 55c. to 60c. for small lots.

Quicksilver—Has not been changed, prices quoted here remaining at $51 per flask of 76½ lbs., in lots of 50 flasks and more. The London market is unchanged at £9 2s. 6d.

Tin Plates.—A good demand and unchanged prices characterize the market. The demand seems to be well distributed over all portions of the trade. The American Tin Plate Company still quote on a basis of $4.19 per box

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JANUARY 16, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
$29,000,000	Am. Car & Foundry Common	21½-22⅜	21¾-22⅛	21¾-22⅛	21¼-21½	20¾-21¾	20½-20⅞	7,100
29,000,000	Am. Car & F'ndry, Pref. (7 % Non-Cu.)	70¾-71½	70⅜-70¾	70 -70¼	69¾-70⅜	69¾-70½	69½-70	5,100
19,000,000	Am. Steel Hoop, Common	29 -30¼	29½-30	29 -29½	29 -30½	28⅜-31¼	26¼-29¼	13,300
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)	76 -76½	76 -76½	-76	75 -75¾	-76	.....	2,000
50,000,000	Am. S. & W., Common	42½-43⅝	42⅝-43½	40 -43⅞	38 -41½	39 -43⅛	39¼-41¼	84,100
40,000,000	Am. S. & W., Pref. (7 % Cu.)	86¾-87¾	87¼-87½	87 -87½	86 -87	85½-87	84 -85	8,800
28,000,000	Am. Tin Plate, Common, N. Y.	59 -60	59⅛-59¾	60 -62⅝	62⅝-65½	60⅜-65¼	57¾-61¾	98,400
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)	-90	90¼-91	90⅛-90¼	90 -91	91½-91⅝	.....	2,400
7,500,000	Bethlehem Iron†	-60	-60	.....	-59⅞	.....	-59	754
15,000,000	Bethlehem Steel, par $50, $1 paid in	-19	.....	.....	.....	17½-18¾	-17¾	875
7,974,550	Cambria Iron, Philadelphia*	-45¼	-45¾	45½-45¾	-45¾	-45¾	-45½	280
16,000,000	Cambria Steel**	20⅝-20½	20⅝-20½	20⅝-20⅝	19¾-20½	18⅛-20	18 -17	21,161
11,000,000	Colorado Fuel & Iron	52 -52¾	52¼-52¾	52 -52⅞	50 -52	49½-51¾	46¾-49½	27,300
46,484,300	Federal Steel, Common	54¾-56¾	54⅞ 55¾	54½-55½	53½-56½	49 -56¾	47 -51	294,300
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	75⅛-76	75 -75½	75 -75¾	75 -76	74 -75½	70¼-74⅛	17,500
32,000,000	National Steel, Common, N. Y.	40½-41¼	40 -40⅝	39½-41¼	40 -42	40½-43½	40 -41¼	36,600
27,000,000	National Steel, Pref., N. Y. (7 % Cu.)	-92	92 -92¼	.....	91⅞-92½	-92	91¾-92	1,200
40,000,000	National Tube, Common, N. Y.	59 -61¼	58 -60	55 -58¼	53½-55¼	55¾-57¾	56 -57¾	45,300
40,000,000	National Tube, Pref., N. Y. (7 % Cu.)	98 -100¼	99½-100¼	99 -100	98½-99¼	99 -99½	-99	13,200
5,000,000	Penna., Common, Philadelphia	.....	.....	.....	.....	.....	.....	....
1,500,000	Penna., Pref., Philadelphia	.....	.....	.....	.....	.....	.....	....
12,500,000	Pressed Steel, Common	43 -47	43¼-44½	43 -44¾	41 -44	43 -44¼	43 -43½	16,300
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	76 -81¼	78 -78½	-80	79¾-80	-80	79½-79⅞	2,700
27,191,000	Republic Iron & Steel, Common	15¼-15⅝	15 -15¼	-15¼	14⅛-15	14¼-15⅛	14¼-14⅞	7,100
20,306,900	Repub. Iron & Steel, Pref. (7 % Cu.)	63 -64	-62	61½-61⅝	60 -60½	59⅞-61	59 -60	3,125
7,500,000	Sloss-Sheffield S. & I., Common	22 -23	.....	.....	20 -22	-22⅛	.....	400
6,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	.....	-68	.....	.....	.....	.....	100
20,000,000	Tennessee Coal & Iron	54 -58½	56¾-58⅞	55¾-57½	54 -56¾	54 -55¾	53 -55½	36,400
1,500,000	Warwick Iron & Steel (par $10)	7¾- 8	.....	.....	.....	.....	- 7⅞	175
15,000,000	International Pump, Common	.....	-27⅝	.....	-27	.....	-27	400
12,500,000	International Pump, Preferred	.....	.....	.....	-75⅞	76 -76¾	-76	800
11,000,000	International Silver	.....	7½- 8½	8½- 9	.....	- 8¼	- 8⅛	1,000

* Par $50. ** $10.50 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., $130,656; Am. Tin.Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $9,822,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D & I R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; National Tube, none; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 %, Steelton, 1st, 1917 $2,000,000 5 %; Sparrow's Point, 1st, 1922, $4,000,000, consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,810,000, Col. Fuel & Iron Gen. Mort. 5 % $2,308,000. Also outstanding $2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $1,835,000.

of standard 100-lb. Cokes, f.o.b. New York, or $4, f.o.b. mill. The London price has been advanced a shade and the quotation which is now given is 12 shillings 7½ pence.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U.S. product.	Product foreign mines.	U. S. exports.
First half 1895	70,612	9,100	79,712	42,484	34,215
Second half 1895	84,885	6,600	91,485	43,674	30,507
Total 1895	155,497	15,700	171,197	86,178	64,722
First half 1896	94,180	7,200	101,380	42,255	58,216
Second half 1896	95,314	7,200	102,514	43,941	67,287
Total 1896	199,494	14,400	203,894	86,196	125,503
First half 1897	103,651	5,000	108,651	44,263	64,870
Second half 1897	100,555	6,900	107,455	44,007	64,340
Total 1897	204,206	11,900	216,106	88,270	129,210
First half 1898	112,687	7,800	120,487	40,880	68,284
Second half 1898	103,535	10,250	113,785	43,674	76,831
Total 1898	216,222	18,050	234,272	84,554	145.115
First half 1899	111,987	12,500	124,487	43,629	56,460
Second half 1899	118,818	18,900	137,719	45,611	63,351
Total 1899	230,806	31,400	262,206	89,240	119,811
First half 1900	114,177	20,400	134,577	43,153	90,747
July, 1900	19,612	3,400	23,012	7,443	11,636
August, 1900	17,667	3,400	21,007	7,535	13,861
September, 1900	17,986	3,400	21,346	7,145	10,425
October, 1900	19,945	3,400	23,345	7,920	12,682
November, 1900	19,876	3,400	23,270	7,752	9,508
December, 1900	18,724	3,400	22,124	8,483	11,223

Benjamin Sel and Benjamin Davis, heretofore jobbers and dealers in Sheet Iron, Tin, Tin Plate and Metals, under the style of B. Sel & Co., will continue under the name of Sel & Davis, at 59 and 61 Orchard street, New York.

Iron and Industrial Stocks.

The market for iron and steel stocks had some startling surprises during the week. The uneasiness caused by the announcement of Carnegie plans was accentuated by reports, which cannot be verified, that the Federal Steel Company propose to issue $10,000,000 in bonds to provide the funds for improvements. The drop in prices which followed the Federal and Tin Plate declaration of dividends was puzzling.

The sales of Federal Steel to-day reached 122,000 shares of common, the market declining to 47, but recovering at the close to 48⅝, while the preferred lost 3½ points to 70½. The sales of Tin Plate aggregated 20,000, the market receding to 57¾, but closing at 59. Nearly all the steel stocks were sympathetically affected.

	Bid.	Asked.
American Bicycle Company, common	5½	6½
American Bicycle Company, preferred	25	26½
American Bicycle Company, bonds	71½	74
American Bridge Company, common	42½	43
American Bridge Company, preferred	91	92
American Sheet Steel, common	22	26
American Sheet Steel, preferred	75½	76
E. W. Bliss, common	..	137½
E. W. Bliss, preferred	125	..
Cramp's Shipyard stock	81	83
Crucible Steel Company, common	23	24
Crucible Steel Company, preferred	78	82
Diamond State Steel	3½	3⅝
Dominion Iron & Steel Company	21¾	..
Empire Iron & Steel Company, common	6	10
Empire Iron & Steel Company, preferred	35	45
National Enam. & St., common	18	20
National Enam. & St., preferred	80	84
New Haven	5⅛	5¼
Otis Elevator, common	28½	29½
Otis Elevator, common	91	92
Pratt & Whitney, common	3½	5
Pratt & Whitney, preferred	45	55
Tidewater Steel	7	7¼
U. S. Cast Iron Pipe Company, common	5	5¼
U. S. Cast Iron Pipe Company, preferred	33	36
U. S. Projectile	100	..
Va. C. I. & C., stock	4	6
Va. C. I. & C., bonds	34	35½
H. R. Worthington, preferred	108	112

Cambria Steel Company.—The annual report of the Cambria Steel Company shows gross profits for the year of $3,943,258. From this is deducted for rental and inventory guarantee account, covering depreciation in stock of raw material, a total of $850,871, leaving a net result for the year of $3,092,387. There has been paid $2,560,000 in dividends. There has been carried to surplus account $532,387, which amount, added to the former surplus, makes that account at the end of the fiscal year, October 31, 1900, $1,735,517. There has been expended during the year $2,441,417 for new property and plants.

It was announced on the Pittsburgh Stock Exchange last week that the Union Trust Company of that city are preparing to issue negotiable receipts for common stock of the American Sheet Steel Company in exchange for the temporary receipts issued to the original subscribers. This will facilitate trading in the stock.

The secretary of the American Steel & Wire Company has asked for proxies for William Edenborn, Alfred Clifford, Thomas Dolan, John W. Gates, Isaac L. El-

wood, John Lambert and William B. Palmer. The directors to be chosen are to succeed Alfred Clifford, William P. Palmer, Philip W. Moen, Stewart H. Chisholm, Randal Morgan, P. A. B. Widener and Herman Sielcken. The annual meeting takes place on February 19.

American Tin Plate Company.—The following is the balance sheet of the American Tin Plate Company as of December 31:

Assets.	1900.	1899.	Changes.
Plants, patents, &c....	$43,494,161	$43,404,508 Inc.	$89,653
Securities purchased in the year.....	1,127,801	..... Inc.	1,127,801
Other securities.....	375,000	..... Inc.	375,000
Merchandise	4,851,544	4,951,926 Dec.	100,382
Assets receivable.....	1,468,193	1,518,247 Dec.	50,054
Cash	3,367,246	989,984 Inc.	2,377,262
Totals.....	$54,683,945	$50,864,665 Inc.	$3,819,280
Liabilities.			
Preferred stock.....	$18,325,000	$18,325,000	.....
Common stock.....	28,000,000	28,000,000	.....
Totals.....	$46,325,000	$46,325,000	.....
Purch. money mortgage	195,000	270,000 Dec.	$75,000
Accounts payable.....	948,424	1,656,239 Dec.	707,815
Surplus	7,215,521	2,613,426 Inc.	4,602,095
Totals.....	$54,683,945	$50,864,665 Inc.	$3,819,280

The net cash assets, after paying dividends on the preferred stock and all other charges, December 31, 1900, were $10,046,360. Net cash assets after paying dividends on the preferred stocks and all other charges, December 31, 1899, were $5,471,693. Increase in net cash assets during the fiscal year ending December 31, 1900, $4,574,667, equal to 16 1-3 per cent. on the common stock. After the meeting of the stockholders the Board of Directors met and charged off $1,500,000 for depreciation. At the meeting George Greer, Cecil A. Robinson and Warner M. Leeds were elected directors for five years. The board organized at once and elected the following officers: President, D. G. Reid; first vice-president, W. T. Graham; second vice-president, Warner Arms; third vice-president, W. M. Leeds; treasurer, F. S. Wheeler; secretary and assistant treasurer, E. G. Applegate; assistant secretary and second assistant treasurer, H. B. Wheeler.

Dividends.—The Susquehanna Iron & Steel Company have declared the quarterly dividend of 1½ per cent.

The United States Steel Company of Boston have declared a quarterly dividend of 3 per cent., payable Monday, January 28. Books close January 23.

The Cambria Steel Company have declared a dividend of 50 cents per share, payable February 15, as registered January 31.

The American Tin Plate Company have declared a dividend of 8 per cent. on their common stock, payable quarterly. The first dividend will be paid on February 1, 1901.

The National Tube Company have declared the regular quarterly dividend of 1½ per cent. on their common stock, payable February 15. Books close January 29 and reopen February 18.

The Federal Steel Company have declared a dividend of 5 per cent. on the common stock for the year 1900, payable February 20. Books close January 28.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street.
New York, January 16, 1901.

Final touches have at last been given to the reorganization of the Pratt & Whitney Company, which in effect is the absorbtion of the Hartford concern by the Niles-Bement-Pond Company. All negotiations were concluded during the last week and the directors and officers were elected. While the Pratt & Whitney Company are to operate as a distinct and separate organization, precisely on the lines of the other constituent companies of the Niles-Bement-Pond Company, the voting majority of the stock is controlled by the leading interests of the latter concern, and the officers and majority of the Board of Directors are officers and directors of the Niles-Bement-Pond Company.

The old stockholders of the Pratt & Whitney Company retain the preferred stock, but the common stock has all passed into the hands of the Niles-Bement-Pond interests. The new Pratt & Whitney Company are capitalized at $2,750,000, of which $1,225,000 is preferred and $1,525,000 common stock. The action of the stockholders in relinquishing the common stock was unanimous.

The following officers were elected by the new company: R. C. McKinney, president; Walter L. Clark, vice-president; C. L. Cornell, treasurer, and Francis C. Pratt, secretary. The directors elected are as follows: R. C. McKinney, T. T. Gaff, F. W. Gordon, Amos Whitney, C. C. Cuyler, George W. M. Reed, W. L. Clark, C. L. Cornell and J. K. Cullen.

Former president Amos Whitney, R. F. Blodgett, secretary of the old organization, and T. J. Nicholl and F. C. Pratt, who were vice-presidents of the old company, have decided to retire from the active management of the company, although a large block of the preferred stock is held by them. Their interests will be represented in the Board of Directors by Amos Whitney.

The trade will readily recognize the advantage which the consummation of this transaction has given to the Niles-Bement-Pond Company. It has filled a gap which formerly existed owing to the lack of a line of the smaller types of tools. The company are now in a position to contract for the equipment of an entire machine shop from the smallest and most sensitive tool to the great and massive mill hammer or lathe. Not only are they now capable of supplying the machinery for the shop, but they are also in a position to supply the mechanics' tools, calipers, gauge cutters, &c., as the absorption of the Pratt & Whitney Company includes their small tool department, which was always a part of the parent company, although operated quite separately. Much of the credit for bringing matters to a successful issue is due to Col. George W. M. Reed, who was the originator of the proposition and who worked most persistently to effect the deal despite innumerable obstacles which had to be surmounted. Colonel Reed was at one time president of the Pratt & Whitney Company and is a heavy stockholder.

We are informed that the Locomobile Company of America are now going ahead with their plans of consolidating all of their scattered plants on one great site at Bridgeport, Conn. They have commenced purchasing of new machinery by placing an order with the E. P. Allis Company for a 300 horse-power tandem compound engine. The most important of the plants to be moved to Bridgeport is that at Westboro, which was formerly operated by the Humber Cycle Company. It is expected that this plant will be removed in April.

There is further activity to be noted on the part of the railroads in the way of increasing their machine shop capacity. The New York Central Railroad shops at Oswego, N. Y., it is said, are about to be doubled in capacity, and the company are investigating the subject of machinery equipment. The Baltimore & Ohio Railroad, it has been learned, are preparing elaborate plans for shop extension. Besides small purchases which they are making for their various shops they are arranging to enlarge materially those located at Glenwood, Pa. They are also preparing to rebuild the shops recently destroyed by fire at Connellsville, Pa. Plans are now being prepared for this work by F. D. Underwood, second vice-president and general manager, who is located at Baltimore, Md.

It is said in the trade that overtures are being made by the Virginia & Southwestern Railroad toward the rebuilding of their shops at Bristol, Tenn, which were recently destroyed by fire.

The Stanley Electric & Mfg. Company of Pittsfield, Mass., are still shopping about for a number of machine tools to be added to the fine new equipment which they have recently purchased for installation in the new machine shop which is being added to their works. The company are now building railway generators and other direct current apparatus in addition to their usual polyphase work..

It is said in the street that the plant of the Stanton Mfg. Company of Waltham, Mass., which was recently purchased by the New England Motor Carriage Company, is to be extended.

Proposal blanks are being received in the trade for a

nice lot of tools which the Navy Department intend purchasing for the Boston Navy Yard. The bids will be opened on January 29. A. S. Kenny, paymaster U. S. Navy, is sending out the specifications. A locomotive crane is required in addition to the machine tools.

It is reported that McDowell & Co. of 347 Fifth avenue, Pittsburgh, are shopping about for machine tools. The concern are said to be looking for a suitable site for the erection of a $50,000 machine shop.

We are informed that the National Malleable Casting Company, of Scranton, Pa., are looking up equipment for fitting out a new addition which they are to build to their steel foundry. It is said that the extension will be 200 by 60 feet.

Machine tool builders are generally anxious to get their tools in the mechanical departments of the engineering schools and colleges. Consequently the announcement that the trustees of Lehigh University are about to spend $5000 in equipping a new mechanical engineering laboratory is of interest. Lehigh University is located at South Bethleham, Pa.

Railroad equipment companies are receiving considerable business from the Cuba Company, whose New York address is 80 Broadway. This concern are building a railway through Cuba that will be 400 miles in length. At present only the preliminary stages have been reached. Terminal yards are being built for the assembling of materials, construction roads are being built and 1000 men are at work at grading of the main line. In certain sections the survey has not been completed. It will thus be seen that the present purchases, which are running up pretty well in volume, are simply a taste of what is to come. The company in addition to their railroad work will soon commence operations in developing a number of Cuban iron mines, and this will necessitate additional purchases of some magnitude. It is said that the company are supported by a strong financial syndicate and they are looked upon as an influential factor in the development of the island. Sir William C. Van Horne, the president of the company, is now at the New York offices.

Bids are now being received at Washington for the material reuired in the building of the new edifice for the Department of Justice, at Washington, D. C. There will be considerable heating and ventilating apparatus and an electric light and elevator plant.

Bids will be received by the Committee on Buildings of the Board of Education of New York City, until January 21, for installing an electric light plant and accessories in Public School 131, a new building which is being erected at Fort Hamilton avenue, Brooklyn. The headquarters of the board are at Park avenue and Fifty-ninth street, Manhattan.

Sanderson & Porter of 31 Nassau street are purchasing the equipment for a new power station to be erected in connection with a street railway project at Youngstown, Ohio. Among the principal apparatus still to be purchased are the pumps and condensers. The contract for the engines was awarded to the International Power Company of Providence, R. I. There will be two 900 horse-power cross compound condensing engine. The Babcock & Wilcox Company received an order for 1600 horse-power of water tube boilers. Westinghouse, Church, Kerr & Co. will equip the boilers with Roney mechanical stokers. A steel stack 180 x 10 feet is to be furnished by the William B. Pollock Company of Youngstown, Ohio. The Link-Belt Machinery Company are to supply the coal and ashes handling and conveying machinery. The valves were ordered from the Chapman Valve Company. The Westinghouse Electric & Mfg. Company will furnish two 600-kw. direct-connected generators and the car equipment. The 20 miles of steel rails required have been purchased from the National Steel Company.

Parties in the trade have received from the Water Board of Brookline, Mass., specifications for a vertical triple expansion crank and fly wheel pumping engine of 5,000,000 gallons capacity. It is to be installed at the Low Service Pumping Station, Brookline, Mass., and bids will be received until February 19.

It might be well to note that to-morrow afternoon the bids for the two 15,000,000-gallon pumping engines, boilers and appurtenances which are to be installed at the new aqueduct, New York City, will be opened at 21 Park row, in room 1536.

J. P. Hawes of 54 Kilby street, Boston, is about to visit the Far East, touching particularly at Japan, China, Russia and Manila. He is an engineer, with experience in placing contracts for machinery in the Orient, and informs us that he is desirous of representing American machinery builders while on his trip or arranging for agencies.

OBITUARY.

WILLIAM T. KOKEN.

William T. Koken, president of the Koken Realty Company, and formerly president of the Koken Iron Works, St. Louis, died suddenly January 3. Mr. Koken was 50 years old. All of his life was passed in St. Louis. In 1870 the firm of Scherpe, Koken & Graden were formed. They were succeeded by the Scherpe & Koken Architectural Iron Works and in 1892 became the Koken Iron Works. He made a fortune in the business and about a year ago disposed of his interest in the Koken Iron Works.

ELI T. BANGS.

Eli T. Bangs, formerly an extensive Government contractor, who, among other important works, constructed the Sault Ste. Marie locks, the Delaware breakwater and Charleston harbor, died on January 4 at his home in Fayetteville, N. Y., after a long illness, aged 71 years.

JOSEPH P. METCALF.

Joseph P. Metcalf, head of the Erie Malleable Iron Works, Erie, Pa., died from pneumonia on January 1 at the age of 53 years, after a week's illness. He was born in Erie and was educated in the public schools of that city and the Cleveland Institute of Cleveland, Ohio. He was engaged in railroading until 1870, when he went West and became interested in mercantile business in Nebraska. In 1873 Mr. Metcalf returned to Erie and engaged in business with his father, Prescott Metcalf. When the Erie Malleable Iron Works were organized he became a member of the firm, and upon the death of John Clemens succeeded to the chairmanship of the concern, a position he held at the time of his death.

SETH C. JONES.

Seth C. Jones, superintendent of the Chelmsford Foundry Company, Malden, Mass., died, January 3, of pneumonia, at his home in that town. He was born in Dorchester, Mass., 76 years ago, and had been a resident of Malden since 1856. Mr. Jones was one of the foremost citizens of Malden and served in the Common Council for some years.

NOTES.

WILLIAM COLLINS, an old New York foundryman, died on January 8 at his home in Harlem. Up to four years ago, when he retired from business, Mr. Collins was the head of the firm of John C. Collins & Co., iron founders.

PRESTON C. F. WEST, who died of heart disease at his home in Boston, Mass., on January 11, aged 65 years, was for nearly 20 years actively connected with the Calumet & Hecla Mining Company, of which he was the civil engineer. He was born in Philadelphia and during the Civil War served as a captain on the staff of General William F. Smith. He was employed when a young man as a mining engineer in Central and South America, and spent much time in surveying work with Prof. Agassiz on the Pacific Coast.

GEORGE W. HOFFMASTER, head of the firm of G. W. Hoffmaster & Son, furnace contractors, of Reading, Pa., died suddenly of heart disease on January 2, while superintending work on the Keystone Furnace. Mr. Hoffmaster was born in Reading in 1837 and had resided all his life in that city.

CHARLES F. HOLLIS, of Newton Highlands, Mass., who died on January 10, at the Boston City Hospital, as the result of an accident, aged 69 years, was engaged in the tin plate and sheet metal trade in Boston for nearly 50 years

Reduced Rates on Pig Iron, Billets, &c.

We give below the reduced rates of freight on pig iron, billets and articles taking billet rates from Akron, Buffalo, Cambridge, Canal Dover, Canton, Cleveland, Erie, Lorain, Massillon, Oil City, Pittsburgh, Wheeling and Youngstown to points in Central Freight Association territory, adopted at a meeting of the Central Freight Association held in Chicago last week, and which become effective February 1. The new rates are as follows:

From	Pittsburgh.			Mahoning and Shenango Valleys.			Cleveland.		
	Articles of iron and steel.		Billets. Pig iron.	Articles of iron and steel.		Billets. Pig iron.	Articles of iron and steel.		Billets. Pig iron.
To	C. L. Cents.	L. C. L. Cents.	$ $	C. L. Cents.	L. C. L. Cents.	$ $	C. L. Cents.	L. C. L. Cents.	$ $
Boston, Mass	16	19½	3.00 2.80	18	21½	3.40 3.20	19	22½	3.60 3.40
New York City	13	16	2.40 2.20	15	18	2.80 2.60	16	19	3.00 2.80
Philadelphia, Pa	12	15	2.20 2.00	14	17	2.60 2.40	15	18	2.80 2.60
Baltimore, Md	11½	14½	2.10 1.90	13½	16½	2.50 2.30	14½	17½	2.70 2.50
Albany, N. Y	13	16	2.40 2.20	14	17	2.60 2.40	15	18	2.70 2.50
Utica, N. Y	12	14½	2.20 2.00	11½	14½	2.10 1.90	12	14½	2.20 2.00
Syracuse, N. Y	11	13½	2.00 1.80	11	13½	2.00 1.80	11	13½	2.00 1.80
Rochester, N. Y	9½	11½	1.70 1.60	9	11	1.60 1.50	9½	11½	1.70 1.60
Buffalo, N. Y	9	11	1.55 1.50	8	9½	1.25 1.25	8½	10	1.25 1.25
Virginia common points	16	20	2.70 2.40	16	20	2.90 2.60	16	20	2.90 2.60

From—	Pittsburgh.		Wheeling.		Buffalo.		Youngstown.		Cleveland and Lorain.	
To	Billets, &c.	Pig iron.	Billets, &c.	Pig iron.	Billets, &c.	Pig iron.	Billets, &c.	Pig iron.	Billets, &c.	Pig iron.
Akron, Ohio	125	125	100	90	125	125	85	75	75	65
Alliance, Ohio	105	95	90	80	125	125	..	..	85	75
Anderson, Ind	235	210	235	210	245	220	195	170	175	160
Ashtabula, Ohio	125	125	135	135	110	100	85	75	85	75
Bay City, Mich	270	250	270	250	230	210	230	210	210	190
Beaver Falls, Pa	70	60	85	75	155	150	..	..	125	125
Bucyrus, Ohio	170	150	170	150	170	150	135	120	120	100
Buffalo, N. Y	155	150	155	150	..	..	125	125	125	125
Burlington, Iowa	410	390	410	390	410	390	370	350	350	330
Butler, Pa	70	60	100	90	155	150	85	75	125	125
Cambridge, Ohio	105	95	85	75	155	150	105	95	125	125
Cana' Dover, Ohio	105	95	85	75	155	150	85	75	85	75
Canton, Ohio	125	125	90	80	135	135	85	75	85	75
Charleston, W. Va	245	225	195	175	280	245	245	225	245	225
Chicago, Ill	270	250	270	250	270	250	230	210	210	190
Cincinnati, Ohio	210	190	210	190	225	205	170	150	170	150
Cleveland, Ohio	125	125	125	125	125	125	85	75	..	..
Columbus, Ohio	160	140	135	125	200	180	145	130	125	125
Conneaut, Ohio	125	125	135	135	110	100	85	75	85	75
Connellsville, Pa	85	75	130	120	185	180	130	120	155	145
Corry, Pa	125	125	150	135	85	75	85	75	125	125
Coshocton, Ohio	115	115	100	90	155	150	115	115	115	115
Dayton, Ohio	205	185	205	185	220	200	165	145	150	135
Detroit, Mich	210	190	210	190	170	150	170	150	150	130
Duluth, Minn	460	440	460	440	460	440	420	400	400	380
Dunkirk, N. Y	155	150	155	150	75	65	125	125	125	125
E. St. Louis, Ill	330	310	330	310	330	310	290	270	290	270
Erie, Pa	125	125	135	135	85	75	85	75	85	75
Evansville, Ind	330	310	330	310	330	310	290	270	290	270
Findlay, Ohio	200	185	200	185	200	185	160	145	130	115
Ft. Wayne, Ind	225	205	225	205	225	205	185	165	175	155
Indianapolis, Ind	235	210	235	210	245	220	195	170	185	170
Johnstown, Pa	100	85	130	120	185	180	130	120	155	145
Joliet, Ill	270	250	270	250	270	250	230	210	210	190
Latrobe, Pa	70	60	105	95	155	150	105	95	135	125
Lima, Ohio	205	185	205	185	210	190	165	145	150	130
Louisville, Ky	270	250	270	250	280	260	230	210	230	210
Milwaukee (all rail), Wis	310	290	310	290	270	250	270	250	250	230
Mt. Vernon, Ohio	160	140	150	130	200	180	145	130	125	125
Newark, Ohio	145	130	115	115	200	180	145	130	125	125
Oil City, Pa	125	125	140	135	125	125	85	75	105	105
Parkersburg, W.Va	140	130	115	105	200	180	140	130	140	130
Pittsburgh, Pa	..	..	85	75	155	150	85	75	125	125
Portsmouth, Ohio	170	150	170	150	225	205	170	150	170	150
Springfield, Ohio	205	185	205	185	220	200	165	145	150	135
Steubenville, Ohio	85	75	..	..	155	150	90	80	125	125
Terre Haute, Ind	270	250	270	250	270	250	230	210	210	190
Toledo, Ohio	170	150	170	150	170	150	140	120	120	100
Vincennes, Ind	290	270	290	270	300	280	250	230	250	230
Warren, Pa	155	150	155	150	125	125	125	125	125	125
Washington, Pa	70	60	70	60	155	150	90	80	125	125
Wheeling, W. Va	85	75	..	..	155	150	90	80	125	125
Youngstown, Ohio	85	75	90	80	125	125	85	75	85	75
Zanesville, Ohio	125	125	85	75	200	180	125	125	125	125

From Beaver Falls, Ellwood City and Beaver to	Billets, &c.	Pig iron.
Pittsburgh, Pa	0.70	0.60
Latrobe, Pa	0.95	0.85
Connellsville, Pa	1.15	1.05
Johnstown, Pa	1.20	1.10

NOTE.—Columns headed Billets will apply on ‡billets, ‡blooms, borings, crop ends, ingots, muck or puddle bars, old car wheels and axles, old rails, scrap iron and steel, scrap tin, ‡slabs per gross ton. In carloads, minimum weight 15 gross tons.

Columns headed Pig Iron will apply on pig iron per gross ton as per official classification, in carloads, minimum weight 15 gross tons.

‡ The rates on billets, blooms and slabs, in carloads, will apply only on such unfinished materials as are intended to be rerolled and can be transported in open cars without damage from exposure to weather, and which are covered by the following description:

Billets and blooms, the combined measurement of the width of the four sides being not less than fourteen (14) inches;

Also billets in less sizes than the above named, providing they are square (not round, flat or oval), the minimum size to be not less than one and one-quarter (1¼) inches square, and the weight of each being not less than one hundred and fifty (150) pounds;

Slabs, rough and unfinished, the combined measurement of the width of the four sides of each being not less than fourteen (14) inches, and each slab to be not less than one and one-half (1½) inches in thickness.

The railroads have also agreed to reduce freight rates on articles of iron and steel in carloads and less than carloads and on billets and pig iron from Pittsburgh, Mahoning and Shenango Valleys and Cleveland to Eastern points, effective on February 1. The new rates are as follows:

Wire rods, pipe iron, sheet and tin bars, ferromanganese and spiegel take billet rates East and West bound. Chain iron, in coils, takes billet rate to specific points.

The new rates on articles of iron and steel from Pittsburgh and points taking Pittsburgh rates to Mahoning and Shenango Valleys, effective February 1, will be 4½c. in carloads and 5c. in less than carloads.

The Edgar Thomson Works on Billets.

PITTSBURGH, PA., January 16, 1901.—It is probable the Edgar Thomson Works of the Carnegie Steel Company at Bessemer will be put on billets Sunday night, January 20. Some changes have been made in the plant, mostly to the conveyor system, and unless present plans are changed, the Edgar Thomson mill will be on billets next week, the first time in four years. It is stated that orders for rails for prompt shipment have been mostly filled, and it is preferred to run on billets in preference to rails and piling the latter.

The Sharon Steel Company.—Negotiations are reported to be in progress by which the product of tin plates of the 20-mill plant of the Sharon Steel Company, now building at Sharon, Pa., will be taken at market prices by the American Tin Plate Company. We are in a position to state that these negotiations are not yet closed, nor is a similar plan in which the American Steel & Wire Company is interested, to take over the entire wire rod, wire and nail product of the Sharon Steel Company.

The stockholders of the Carnegie-Pittsburgh, Bessemer & Lake Erie Railroad have placed their proxies for the special meeting to be held in Pittsburgh to-day (Wednesday) to vote on the proposition to lease the property of the company to the Bessemer & Lake Erie Railroad Company, recently incorporated in Pennsylvania with nominal capital, which is a new subsidiary interest of the Carnegie Company. The meeting was only a formal one, it having been established in the delivery of proxies that the terms of the lease guaranteeing the common shareholders 3 per cent. dividends would be accepted.

During the year 1900 2,242,037 gross tons of ore left the docks at Ashtabula, Ohio, via the Jamestown and Franklin branch of the Lake Shore & Michigan Southern Railroad, against 1,826,052 gross tons the previous year.

In spite of the announcements made, no definite decision has been arrived at as to the relocation of the general offices of the Shelby Steel Tube Company. The operating department is being transferred to Shelby, Ohio, for the greater convenience in the conduct of the business.

We are officially advised that there is no truth in the report that the American Tin Plate Company will build a new large tin plate plant in the Pittsburgh district.

The Railway and Steel Supply Company have opened an office at 640 Chamber of Commerce Building, Portland, Ore., with a full line of iron, steel, locomotives and railway supplies.

HARDWARE.

The address to British manufacturers and the expressions of a prominent German journal, which are given in another column, recognizing the position which American manufactured products are assuming in the world at large, so far from tending to disconcert American producers, may be received, as the diplomats phrase it, with acknowledgments of distinguished consideration. Naturally the unbiased foreign buyer who is not already in touch with American manufacturers and merchandise will at least be disposed to reflect that when the scouts of the British and Continental manufacturers cross the seas to study our methods of production and ascertain the secrets of our success, the buyer is at least justified in investigating the situation and inquiring whether, instead of absorbing large volumes of manufactured merchandise from the markets of the old world, as has long been his custom, he cannot be better served in the United States.

The criticism is often made that American manufacturers are too open hearted in showing outsiders and competitors through their works and giving them an inside view of their methods. This possibly in some cases works harm; but the enterprising American knows that imitators seldom catch up with originators, and that as a rule the followers at best only find a deserted camp-fire and evidence that the object of their pursuit has been there, for the typical American manufacturer is never satisfied with a good process, but is always seeking improvements in plant and methods. This seriously enhances the difficulty of catching him.

The familiar story of the effects of combinations in encouraging competition is told again in the following letter of a manufacturer who until recently was identified with a strong organization of that character:

> We did not deem it advisable to continue the arrangement for the reason that it was encouraging the building up of too much outside competition. There are several manufacturers that are in good position to take care of themselves in the open market, have a large business on reliable goods of good reputation, and can manufacture, owing to their large capacity and modern equipment, at enough lower cost to keep the smaller manufacturers in the background and still make a reasonable margin of profit. Such factories had everything to lose and practically nothing to gain as compared with the small manufacturers. Experience leads us to believe that any manufacturer who has built up a business on merit, and has established a reputation on his goods, had better keep his fingers out of combinations and pools.

The market in question is now an open one and suffers to some extent from the results of the combination. In certain other lines there are reasons to believe that the temporary benefits of combinations or pools will be offset by the demoralized condition of the market under increased competition when the inevitable break comes.

The Ethics of Business.

Whatever theories may be held, the fact remains that an enlightened self interest is in business, as elsewhere, one of the most potent and beneficial springs of action. It has come to pass among civilized people that permanent success in business is not to be won by sharp practice, overreaching and deception, but is rather the prize of perseverance, fair dealing and straightforwardness, coupled with ability. The fact that there are some notable exceptions to this rule does not in any way invalidate the general truth of the statement. It is not alone in copybooks that honesty is the best policy; it is the law in every day business.

The commercial agencies and the numerous legislative acts against fraud have made it both dangerous and unprofitable to be dishonest. Experience has shown that it is shortsighted to misrepresent goods; that it pays better to furnish good quality than poor, and that a good name in business is a tangible and permanent asset.

All this does not mean that the standard of commercial honesty is perfect, but it does mean that it has been slowly but steadily rising for years and that it will hold its own in comparison with most of the standards of other callings.

Again, in the all important dealings of employer and employees, it is being slowly recognized that business is mostly trading in human nature and that every successful concern has been remarkable for the personality of the men who composed it, and that discipline, organization and system have been merely the expression of the men. This means, when analyzed, that sentiment is an element of success, and that the best efforts are the results of encouragement and enthusiasm. It follows, therefore, as an inevitable corollary, that the best results can only be obtained by the best and fairest treatment of the worker. It is a selfish enough proposition on the face of it, yet it is the foundation stone of civilization and progress.

It is not difficult to see this clearly enough now, but the application is not so easy. Attempts to have the rank and file share the results of prosperity along with the officers are plentiful enough, but few so far have proved either feasible or practicable. The trouble generally is that they tend to become mere charities instead of stimulants to renewed efforts. It is the persistence of these efforts, however, despite much discouragement, that is the best promise of their success when experience and further progress shall have shown the right road.

In the meanwhile each employer in a broad or narrow field should recognize the obligation not only to make the business under his direction successful in its financial results, but to do this, as far as possible, in connection with and by means of the development and welfare of those by whom his enterprises are carried into effect.

Condition of Trade.

The market is witnessing an increased volume of business. The holiday quiet is passing away, and both manufacturers and jobbers find the demand setting in upon them from their customers. The orders which manufacturers are receiving are in many cases for considerable quantities, indicating a disposition on the part of the trade to purchase liberally, while at the same time there is almost an entire absence of the speculative element. There is little apprehension of heavy declines in prices generally, but there are some lines which are still regarded as high. A few are somewhat demoralized with a good deal of irregularity in prices. The great mass of goods, however, are held at what are considered fair prices in view of all the circumstances, and on such lines no radical decline is looked for. The course of values in Hardware largely depends on the condition of the Iron market, and this is accordingly closely watched. While the general impression is that present prices of Iron are not likely to be permanently main-

tained, the large volume of current business and the manner in which the market is controlled insure sufficient steadiness to make it quite prudent to purchase manufactured goods which are not abnormally high in sufficient quantities for the regular requirements of the trade. The remarkable growth in the foreign trade of the country, so much of which is manufactured products, is a most important feature of the situation and full of promise for the future. The effect of high prices for raw material in this country and the lowering of European prices are, however, having their effect on the business, which were it not for these influences would reach still larger proportions. There is, however, a constant increase in the variety of goods exported, and with the increasing attention which is being paid to the cultivation of foreign business it is hoped that its volume will continue to expand.

Special Reports.

Chicago.

(By Telegraph.)

The Shelf Hardware trade is now in full swing. Traveling salesmen are actively at work, and are sending in good orders calling for reasonably large quantities covering practically the entire line. Reports indicate that the business of this month will be much in excess of that of last January. This will require a greatly increased movement of merchandise, as prices are now fully 30 per cent. less than at that time. The mild weather prevailing throughout the West for the past week or two is greatly favoring building operations and general outdoor work involving the consumption of Hardware. The volume of business is helped considerably by numerous orders for new stocks. This shows that conditions are considered favorable for new ventures to be made in the retail Hardware trade. The city demand for Hardware shows great improvement. The building trade is much more active, notwithstanding this is the middle of winter. Orders for future delivery are piling up rapidly. The trade report that they have never before had such an accumulation of orders for future delivery. They are making preparations for handling a greatly increased volume of business, adding to their forces of traveling salesmen as well as increasing their employees in the stores. The Heavy Hardware trade is likewise in good condition; orders are numerous and well distributed throughout the stock. Some recent advances in price, which have been made, are having a stimulating effect on buyers. Manufacturing consumers who get their supplies from the Hardware trade are invariably actively at work and drawing larger quantities than usual.

St. Louis.

The only change in the Hardware situation since last week is that the demand for goods has increased. Traveling men are now out in force, and securing liberal orders covering the general line. It is claimed that the volume of business is reaching beyond the trade's expectations. Jobbers' buyers and stock clerks are therefore busily engaged in the replenishing of stock to meet the heavy demand, in which considerable night work seems to be necessary. Mail and wire bring an abundance of inquiries, it being evident that dealers desire prompt shipments. The very mild winter has undoubtedly brought much buying to the front. Improvements have been made that could not conveniently have been carried through during a rigorous season, and which would have been made impossible by the usual spring activities of farmers. The Heavy Hardware trade is showing no let up. Conditions continue favorable, and are borne out by the very good demand of the week.

New Orleans.

A. Baldwin & Co.—The volume of business at the opening of the new year is exceptionally heavy. Most of the travelers are out, and the number of orders being received indicates that country merchants can use large quantities of goods.

The demand for spring goods is exceptionally heavy, and is far in excess of the past year. There are not many startling changes in prices, and the merchants are ordering very freely, and in larger quantities than for some time back.

Baltimore.

Carlin & Fulton.—The first month of the new year promises well for business. A year ago values were inordinately high, and purchases were limited generally to absolute wants, while those with large stocks were anxious to realize. Now that prices have reached a level more in keeping with sound business judgment, and from which there is more reason to expect an advance than a decline buyers are more disposed to purchase freely.

The high prices at which cotton has ruled for the past year has no doubt tempted the farmers to largely increase the acreage devoted to that staple, and the demand for such goods as are required in planting has been very great.

Generally fine weather has prevented any interference with outdoor work, though perhaps trade in winter supplies would have a stimlus were the temperature somewhat colder.

In looking the situation over we think it very favorable for a satisfactory trade in all sections.

Portland, Oregon.

Corbett, Failing & Robertson.—Not for many years has January opened up with as many orders as have come to hand so far this month. It is to be hoped that the old saying, "Good beginning makes a bad ending" will not obtain here, but that the excellent trade which is doing is to be attributed to the dawn of a new century, the ending of which will not trouble us, even if bad.

We do not look forward to having the best year on record in trade, as the low price of wheat, our chief staple, will not conduce toward bringing this about. Wool, of which Oregon clips more pounds than any State in the Union, has not been sold. It is estimated that 75 per cent. of last year's clip is still in the warehouses, and in three months another clip will be ready for market. However, if we do not get a banner year in 1901, it cannot long be delayed. Oregon and Washington offer such inducements that a wave of immigration must soon tend this way that will effect a development that will astound those best acquainted with their resources. With mountains impregnated with gold, silver, iron, lead, quicksilver, asbestos, mica, &c., with vast forests of virgin timber to be cleared, leaving land unequaled for dairy and farming purposes, with a climate peculiarly adapted to these interests, with valleys already raising immense crops of hops, wheat, oats and fruit, with streams like the Columbia, that will, with others, produce $3,000,000 in canned salmon, to say nothing of the fresh, with a climate conducive to health and long years, we abide patiently the good times in store for us.

Louisville.

W. B. Belknap & Co.—The Iron and Steel market on all finished product is fairly active. There is no rush, however, to cover, as seems to be the fashion in the security market, since prices have already established round advances and further advances are not promised. Still it is no easy matter to get assorted orders filled at the mills, not even Bars. Hoops are still more difficult, and Plates and Heavy Sheets seem bought up for several months. Those who have full stocks to offer are reaping the legitimate benefit.

After reading the stories which come from the stock exchange as to the amount of business done, of the fabulous advances scored, and the substantial profit taking which comes with each day, jobbing Hardware seems like rather dull, slow business, but we are already sustained by the thought of the eminent respectability of the calling and the high character of the gentlemen engaged in it, both buyers and sellers.

The copy of *The Iron Age* which opened the first week in the year was a valuable contribution to literature both historical and advertising. It seems to fit in with the new century, which everybody predicts is to prove an era of big things.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The new year has been a little slow in starting off. Trade seems to be resting for a while in the endeavor to "catch breath" after the mad rush for goods we had during December. A good many of the traveling men are just getting well out on the road, which is doubtless one reason for this.

The jobbers generally, in this city, are making preparations to handle a larger business during the coming year than ever before, and all conditions indicate that they will not be disappointed.

The retail merchants throughout the South were never in so prosperous a shape as they are to-day, which is evidenced by the fact that they are buying more liberally than ever before, carrying more complete stocks of merchandise and are meeting their bills promptly, a great many more discounting their bills than heretofore.

The prices of Hardware in this market are very firm, and are being well maintained. Quite a number of lines show a tendency to advance. Among the advances which have been made during the past few days is 50 cents per keg on Horseshoes, and 5 cents per 100 pounds on Bar Iron.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—The business of the new year has begun and the traveling salesmen, having had a brief holiday rest and having spent a few days preparing for the new year's work, have gone into their respective fields and are already very much in evidence with their customers.

In the meanwhile the houses—we speak of Hardware lines—between closing the books of the old year and getting things rapidly into order for the new year, are crowded with work and find no time or place for idle hands.

The profit sheets for 1900 will probably excite the most interest of anything that will demand attention this month, and how to avoid the errors of 1900 in the new year, and also how to emphasize and turn to good account the wise lines of policy followed then will be uppermost in the minds of those in charge.

The declines in prices of Hardware during 1900 have doubtless been the prominent factor in reducing profits, and it is safe to say that more than one-half the net profits that should have been realized in the wholesale Hardware trade since January 1, 1900, has been lost in the declines. This is a pretty heavy price to pay for a widely fluctuating market, and it is to be most earnestly desired that in this respect 1901 will not repeat the experience of the year just closed.

Nor is it likely that it will. We do not believe many lines of goods are to have the treatment accorded by the Screw people to their product. The indications are that the general markets will be steady, and that both the wholesale dealer and the retail dealer may buy for wants without feeling that the next time he buys he may expect to find lower prices.

Notes on Prices.

Wire Nails.—Demand for Wire Nails is not as brisk as in December. It appears that jobbers have not disposed of their purchases as rapidly as they had expected to. The absence of a boom is not considered prejudicial to business, but, to the contrary, is looked upon as a healthy condition of trade. Prospect for an increased distribution of Nails in the future is encouraging. The trade generally have apparently lost interest in any immediate change in prices. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.20
To jobbers in less than carload lots..... 2.25
To retailers in carload lots..... 2.30
To retailers in less than carload lots..... 2.40

New York.—Wire Nails are in moderate demand. The local trade are only buying for immediate requirements, which are light. Prices are as follows:

To retailers, carloads on dock.....$2.48
Small lots at store..... 2.55

Chicago, by Telegraph.—Manufacturers report an excellent demand for Wire Nails and fine prospects for its continuance. The open weather throughout the West enables building operations to be vigorously conducted, and the consumption of Nails is therefore greater than usual in midwinter. Jobbers are likewise having an unusually heavy demand from stock. Prices are maintained at $2.35 for carload lots, with the usual advance for small lots.

St. Louis.—Freight rates to Texas common points have been advanced slightly, delivered prices on Wire Nails bearing, therefore, the increase. Inquiry is quite liberal, and actual sales indicate a strong market. The buying for construction work is said to be quite heavy, and perhaps greater than usual at this period. Price to retailers in carloads is $2.40, base; for smaller lots, $2.45, base.

Pittsburgh.—Demand for Wire Nails has fallen off considerably, but is regarded as fairly satisfactory for this season of the year. Some business is being booked for February delivery. We may state that any change in prices of Wire Nails will be upward. We quote, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.20
To jobbers in less than carload lots..... 2.25
To retailers in carload lots..... 2.30
To retailers in less than carload lots..... 2.40

Cut Nails.—The movement of Cut Nails is not large, but probably up to former dimensions for this time of year. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$1.95
To jobbers in less than carload lots..... 2.00
To retailers in less than carload lots..... 2.10

New York.—Comparatively little interest is taken in Cut Nails in this vicinity. Small lots from store constitute most of the business. Prices are as follows:

To jobbers in carload lots on dock.....$2.13
To jobbers in less than carload lots on dock..... 2.18
To retailers in less than carload lots on dock..... 2.31
Small lots from store..... 2.25

Chicago, by Telegraph.—The demand for Cut Nails is better than had been expected at this season. The building trade is drawing on local stocks for good quantities. Small lots from stock are held at $2.25.

St. Louis.—The usual buying is had this week at unchanged price, ranging from $2.30 to $2.40, base.

Pittsburgh.—Demand is quiet and the market is without special feature. There is no change in prices, and we quote, f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days, as follows: Carload lots, $1.95; jobbers, less than carload lots, $2.

Barb Wire.—Orders are being booked for January and February delivery to some extent. Merchants away from railroads find it more economical to haul Wire on runners than after the annual spring break up. The usual number will probably defer ordering, and will consequently be annoyed by delayed shipments. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....$2.50
To jobbers in carload lots, Galvanized..... 2.80
To jobbers in less than carload lots, Painted..... 2.55
To jobbers in less than carload lots, Galvanized.... 2.85
To retailers in carload lots, Painted..... 2.60
To retailers in carload lots, Galvanized..... 2.90
To retailers in less than carload lots, Painted..... 2.70
To retailers in less than carload lots, Galvanized... 3.00

Ellwood and Baker Wire is 5 cents and Washburn & Moen Glidden 10 cents per 100 higher than the foregoing prices.

Chicago, by Telegraph.—Manufacturers report a heavy demand for Barb Wire, with very little stock at the factories. They are making sales for delivery only within 60 days. This brings shipments at present prices pretty well toward spring, and a much better demand is then expected. An enormous business is being done in Woven Wire Fencing. Every factory is stated to be actively employed, and the largest makers in this line are considerably behind their orders. Quotations are firm at $2.65 for carload lots of Painted and $2.95 for Galvanized Barb Wire, with the usual advance on small lots.

St. Louis.—Mild weather is said to be largely responsible for the very active position Barb Wire occupies at present. Reports from country dealers lead jobbers to say that fence renewals are very generally under way. Prices remain firm at $2.70 in carloads to retailers; smaller quantities $2.75. Galvanized is 30 cents higher.

Pittsburgh.—The market for Barb Wire is extremely dull at the present time, but a material improvement in demand is expected when spring trade opens up, which will be before long. We note a continued active foreign demand. For domestic trade we quote: Galvanized Barb Wire, $2.80, in carload lots to jobbers, and Painted, $2.50. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—The demand for Plain Wire is not large. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots	$2.15	$2.55
To jobbers in less than carload lots	2.20	2.60
To retailers in carload lots	2.25	2.65
To retailers in less than carload lots	2.35	2.75

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanizezd Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).

Nos.						Galvanized.
6 to 9	Base					$0.40 extra.
10	$0.05	advance	over	base		.40 "
11	.10	"	"	"		.40 "
12 and 12½	.15	"	"	"		.40 "
13	.25	"	"	"		.40 "
14	.35	"	"	"		.40 "
15	.45	"	"	"		.75 "
16	.55	"	"	"		.75 "
17	.70	"	"	"		1.00 "
18	.85	"	"	"		1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—A very satisfactory demand is reported by both manufacturers and jobbers. Carload lots, Chicago delivery, are quoted at $2.30, base, with the usual advance on small lots.

Pittsburgh.—There is only a fair amount of business being placed, which will probably increase before long. It is stated that some of the smaller concerns are making concessions in prices on Wire to secure tonnage. We quote:

	Plain.
To jobbers in carload lots	$2.15
To jobbers in less than carload lots	2.20
To retailers in carload lots	2.25
To retailers in less than carload lots	2.35

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. discount allowed for cash if paid in 10 days from date of invoice.

Glass.—Representatives of the American Window Glass Company, the Independent Glass Company and the National Jobbers' Glass Association are holding meetings this week. It is expected that an advance in prices will be made, and that the jobbers' association will place an order for a large quantity of Glass.

Paris Green.—The condition of the Paris Green market is not encouraging, viewed from the manufacturers' viewpoint. Dealers carried over considerable Green from last season, especially in those portions of the West where bugs were not numerous. The trade generally are taking little interest, and are backward about placing orders. Quotations are as follows:

In Arsenic kegs or casks	12½c.
In kegs, 100 to 175 pounds	13c.
In kits, 14, 28, 56 pounds	14c.
In paper boxes, 2 to 5 pounds	14c.
In paper boxes, 1 pound	14½c.
In paper boxes, ½ pound	15½c.
In paper boxes, ¼ pound	16½c.

Paints and Colors.—*Leads.*—Current demand on new orders for White Lead in Oil is small. Deliveries on contracts is fair considering the season. Prices remain firm as follows: In lots of 500 pounds and over, 6½ cents per pound; in lots of less than 500 pounds, 7 cents per pound.

Screws.—The Screw market is in an unsatisfactory condition and low prices are being developed. Some of the jobbers are offering the goods at material concessions from what might be termed regular rates.

Carriage Bolts, Machine Bolts, &c.—This line is one regarded by the manufacturers as in excellent condition, and there was some talk of a further advance. This question, however, was considered by the manufacturers, who have been in session to-day, and it was decided to make no change.

Oils.—*Linseed Oil.*—An advance in Flax Seed has strengthened the Linseed Oil market, and an advance in prices would not be unexpected. While no announcement of a change in quotations has been made the tendency is to get higher prices for State and Western brands. Prices range from 54 to 58 cents, in various parts of the country, but it is questionable whether large lots could be obtained at the lower price. The market for City Raw is 56 cents for five barrels or more, and 57 cents in lots of less than five barrels.

Spirits Turpentine.—There has been a firmer Turpentine market, and more buying. Southern markets are reported stronger on light receipts and increased demand. Dealers have come into the local market, and purchases have advanced prices to 40½ cents for Southerns and 41 cents for machine made barrels.

Cast Iron Soil Pipe and Fittings.—The pool which was formed to control the price of Cast Iron Soil Pipe and Fittings organized during the first week of December. Immediately upon its consummation new prices were announced which showed an advance of about 10 per cent. over the prices which were ruling when the deal was made. On January 8 the Central Foundry Company, who are acting as the mouthpiece for all the other concerns, and who practically control the output of the entire product, announced new prices which showed a still further advance upon the quotations named on December 5. At the time the prices were announced in December it was well known in the trade that prices had not reached their highest level, and that a still further advance would take place after the first of the year. The jobbing trade, however, did not anticipate any advance much before the first or perhaps the fifteenth of February, and the change announced last week came as a surprise to them. It will be remembered that all sales were restricted to those for immediate shipment. No orders were accepted for shipment after December 31, and the manufacturers and foundries reserved the right to cancel any orders they might have on hand which they could not ship prior to the closing of the business year. It will be seen that the Pipe and Fittings business, which was for a long time demoralized, and which is said to have been without profit to the manufacturers, is now in a fair way to pay a percentage of profit to the manufacturers. The new prices show an advance on Standard Soil Pipe of 10 per cent.; on Extra Heavy Soil Pipe, 5 per cent., and on Fittings, 5 per cent. This is on the sizes running from 2 to 6 inch, inclusive.

John P. Barns, years ago in the Hardware business at Anderson, Ind., has lately again identified himself with it, this time at Perkinsville, Ind. Mr. Barns handles Stoves and Tinware, as well as Hardware, and also conducts a tin shop.

Hardware Organizations.

Hardware Merchants and Manufacturers' Association.

The annual meeting of the Hardware Merchants and Manufacturers' Association of Philadelphia was held in their rooms in the Bourse Building on the 15th inst. The election of officers resulted as follows: Hugh McCaffrey, president; Wm. R. Peters, vice-president; T. James Fernley, secretary and treasurer. Board of Managers: Samuel Disston, W. W. Supplee, John Griffith, Fayette R. Plumb, Jas. H. Ritter, Thos. Devlin.

President McCaffrey in his annual review referred to the work of the association during the past year, and also brought up the subject of arbitration of business disputes in the following remarks:

Permit me to call your special attention to a matter which I regard as being of very great importance to all members of our organization—the subject of arbitration of business disputes. I know of a misunderstanding that occurred during the past year between a Hardware merchant of another city and State and one of our manufacturers, who is a member of this association. They could not agree and each submitted his case in writing to a leading member of this body, with the understanding that his judgment would be final. In a short time he notified both of his decision, they accepted in good faith, and it was entirely satisfactory to each. By this an expensive lawsuit, followed by bad feelings, &c., was avoided, and harmony and good will prevailed. I know of no better way to begin the new year and new century than the adoption of a fair, just and equitable arbitration policy for the members of our association.

The Builders' Hardware Committee, T. B. Hendrickson, chairman, submitted their report for 1900, from which we make the following extract:

We have noticed with regret the growing tendency of the jobbers to dispense with their stocks of Builders' Hardware, and to depend almost entirely upon the manufacturer to carry this line for them. The increasing demand for small quantities, even to broken packages of the cheapest goods, shows to us plainly that this is the fact. One of the evils which this new tendency has brought into existence is the constant returning of goods of all kinds, whether salable or not, and in many instances no notice is given and no permission is asked or obtained.

This returning of goods has grown to be an evil, the cure of which we have under consideration. Nothing definite has been done, but unless the conditions change some radical measures will have to be adopted.

Reference was also made in the report to the subject of early closing. At present both jobbers and manufacturers close their places of business on Saturday afternoon from May until October. It was a source of regret to the committee that the jobbers would not join in extending this early closing on Saturday so as to include the entire year. It was their belief that just as much would be accomplished and just as much business done.

Wisconsin Retail Hardware Association.

The Wisconsin Retail Hardware Association have issued the official programme for their fifth annual meeting, at the Republican House, Milwaukee, February 6 and 7. It is in the form of a well printed and attractive booklet of 32 pages, which contains some general advertising, together with constitution and by-laws of the association, list of officers and members, list of other Hardware associations, &c. Accompanying the programme is the following circular letter addressed to the members:

Herewith we hand your our programme for the next annual meeting, and hope you may so arrange your matters as to be with us, feeling assured you wil not regret so doing.

A fare and a third will be granted on the certificate plan, if 100 certificates are presented (of which there is no doubt), you to pay full fare in, and take a certificate from your local agent, which will entitle you to a one-third fare on return. Some of the hotels have also granted reduction in rates to members of the association.

Don't neglect to take certificates.

Neat gold badges will be furnished at the opening of the association.

Some matters of importance will come up for discussion, as:

Why not unite the office of secretary and treasurer in one, and require bonds ?

Shall we urge a closer regard for our rules and a closer study of the Pink List ?

Shall we exempt department stores from being objectionable, and ask jobbers to refrain from selling only consumers and catalogue houses, as Minnesota has done?

Shall we affiliate with any other association ?

Among other changes in constitution, which will be brought up, is one to have at least two members of Executive Committee hold over.

We have lost by death, failure, non-payment of dues, and other causes, 43 during the year, and added 60; so that we have a net gain of 17, making to-day a total of 297 who have paid dues up to the next meeting. Our financial exhibit will show about $600 to the good, and no debts outstanding.

We want you to get into the wagon now. Will you do it ?

St. Louis Retail Hardware and Stove Dealers' Association.

The St. Louis Retail Hardware and Stove Dealers' Association held a well attended meeting on the 9th inst. and elected the following officers: F. A. Kansteiner, president; John May, first vice-president; August Steinmeyer, second vice-president; Adolph Geschwindener, scretary; Louis Boehl, treasurer. Arrangements are being completed to send a large delegation to the annual meeting of the Missouri Retail Hardware and Stove Dealers' Association, which will be held at Kansas City, February 19, 20 and 21. Reduced railroad rates have been secured.

Requests for Catalogues, &c.

THE RENDIGS, MAGILL HARDWARE COMPANY is the title of a new concern organized for the purpose of conducting a general Hardware business at Eighth and Main streets, Cincinnati, Ohio. The company are incorporated with a capital of $15,000, and the following are the officers: Wm. Rendigs, president; F. C. Magill, vice-president; Henry Power, secretary; Wm. P. Rendigs, treasurer. As the company are just beginning business they request that manufacturers and others interested will kindly send them catalogues, quotations, &c.

Wilder's Steamship Company, Honolulu, H. I., on January 1 took up the Ship Chandlery Hardware business, and request copies of catalogues, price-lists, &c., relating to this line. Matter mailed to them should be addressed Wilder's Steamship Company, ship chandlery department, Honolulu.

E. Peltz, Cross Fork, Pa., advises us that he has added a jobbing department to his business, and that he desires to receive catalogues and price-lists from manufacturers relating to his different lines, comprising General Hardware, Builders' and Mill Supplies, Plumbers' Goods, &c.

King, Hollister & Co., El Reno, O. T., are having a building erected preparatory to putting in a stock of Shelf and Heavy Hardware, Stoves, Tin and Enameled Ware, Refrigerators, Wooden Ware, Agricultural Tools, &c., and are desirous of obtaining catalogues and quotations from manufacturers and jobbers.

The *Globe* of Toronto, Canada, for the 7th inst., contains an account of a dinner given at the Iroquois Hotel in that city on the evening of the 5th inst. to the traveling salesmen of the wholesale Hardware house of Rice Lewis & Son by W. A. Campbell of the Wadsworth-Howland Company, Paint manufacturers, Chicago. The participants numbered a round dozen. A *menu* was specially printed for the occasion. It was printed in colors, with the American and British flags at the top and a can of Jewel Mixed Paint at the bottom. The liquids were humorously named after the company's Paint products. Rice Lewis & Son have in a short time built up a large trade in Paints in connection with their Hardware business.

Cultivating English Trade.

WALTER P. NOTCUTT, 19 and 20 Holborn Viaduct, London, E. C., and also Manchester, England, is now in this country on a short business trip. Mr. Notcutt is a Hardware manufacturers' agent, and represents several large manufacturers on the other side. In view of his long and extensive connection among Hardware buyers, both for the home and colonial trade, and as a vice-president of the National Hardware Association of Great Britain, he is in a position to speak as to the prospects and methods of doing business in American Hardware on the other side, and at a recent interview expressed himself as follows on several points which should prove interesting to our Hardware manufacturers:

Great Britain as a Desirable Customer.

Few American manufacturers to my mind properly realize the immense importance of cultivating trade with Great Britain, and of the unique position she occupies as a huge distributing center. Take, for example, the trade returns for the year 1900, and we find that for 11 months ending November, 1900, British imports reached a grand total of $2,322,633,000, as against $2,162,377,000 in the corresponding months of the previous year, showing an increase for one year on imports alone of $160,286,000. Next take the domestic exports, which for 11 months ending November, 1900, reach a total of $1,303,440,000, as against $1,180,720,000 in the corresponding period of the previous year, showing an increase on exports of $122,720,000.

These facts speak for themselves, and go to prove that as a buying and selling concern Great Britain stands unrivaled throughout the world, and will continue to do so, largely on account of her great colonial expansion and the growing prosperity of Greater Britain. It is a well known fact that the colonies receive from the mother country by far the greater portion of their imports, and in some colonies quite two-thirds of the goods they purchase are either manufactured in British workshops or find their way to such colonies through British business houses who purchase such goods abroad. I have before me the statistical abstract from the Treasury Bureau, in which is given particulars of the imports of some of the principal British colonies, showing the percentage of such imports coming from Great Britain. It states that during 1899 the British colonies, as a whole, imported goods to the value of over $500,000,000 from the mother country alone. In British India, the largest colony, the total imports in 1899 were in round figures $300,000,000, of which $200,000,000 were imported from the United Kingdom. Canada, notwithstanding the distance from the mother country, took over $35,000,000, the Australian colonies imported over $350,000,000, but as part of this includes everything whether coming from a neighboring colony or elsewhere, a careful analysis shows that these importations from countries outside of the Australian continent during 1899 were not far from $200,000,000, of which Great Britain, although situated on the opposite side of the globe, furnished over $130,000,000. British West Indies imported in the same year $13,616,000 from Great Britain, the African colonies, also from the mother country, imported $85,000,000, out of a total importation of $130,000,000, and at the Cape of Good Hope alone the imports in round figures during 1899 were $100,000,000, of which $65,000,000 are from the United Kingdom.

These are only a few instances of the great colonial trade of England, and even these large figures are small in comparison to what I believe the future will bring forth, for with the increasing prosperity of the Australian colonies which is sure to be stimulated by federation, which, owing to the wisdom of British and Australian statesmen, has been brought to a successful issue; and further, United South Africa under the British flag will shortly be an accomplished fact, and great trade results are a certainty.

Therefore Great Britain, with the continued growth of her home consumption and her fast increasing colonial trade must be considered by American manufacturers at present and in the future by far their best customer, and being considered so, it is a duty the American manufacturer owes himself to discover the best possible means of securing the good will and confidence of such a desirable customer.

Prospects for American Hardware.

Several years ago there was a natural prejudice against German and American goods, owing largely to the common quality of the goods and the entirely different patterns and designs sent us, which to English consumers were quite foreign. This prejudice has changed somewhat of late. The American manufacturer has discovered that quality and the best quality only is what is required. In proof of this a few days ago, while talking with the chief of an American Tool house, he told me that on a recent visit to London he was showing a full line of his goods to a large buyer there, keeping the common and cheapest lines to the front, but to his great surprise the buyer had no use for these, but gave him a good order for the better qualities, samples of which he had at first kept in the background. This is what is required. Send us your best lines, and by all means keep the quality up, and, what is the most important of all, send us what we want.

Many American manufacturers making lines most suitable for their own country expect the same patterns to suit a market quite different from theirs, whereas the German manufacturer, in most cases, first of all finds out what is required in certain countries, makes the same, and then does his best to get it on the market.

Take one instance out of many. It is useless to attempt to sell the ordinary American front door Lock in England. All English front doors have the handle in the center of the door, and this handle often takes the form of a handsome combination letter plate and door pull, so that any other handle on the door is unnecessary and would spoil its appearance.

If manufacturers of American Builders' Hardware will take pains to make themselves thoroughly acquainted with the various patterns and designs in general use in England there is a great field open for them. It is impossible to attempt to force the English buyer to take anything which differs radically from what is in use, and has been used for so long. In course of time, no doubt, he will come to appreciate some of the purely American features, but if a footing in this direction is to be secured it can only be done by paying careful consideration to his whims and fancies.

How many Brass founders who are setting about seeking trade in England are conversant with the patterns and class of goods being turned out by leading English Brass founders ?

How many File manufacturers are there looking for trade in Great Britain who know that the principal prejudice against American Files is that they are too light for the English market, while by slightly increasing the weights they could overcome that prejudice and secure a footing ? English File users are not to be converted to American practice (excellent as it is) in regard to Files all in a hurry; no doubt in course of time they will come to see that it pays better to use light files, and many of them, than to be hampered with a heavy tool, the weight of which is only necessary for recutting purposes.

Do Your Business Direct.

Just previous to leaving London the principal of a very large firm said to me, Do try and impress upon American manufacturers that what we desire is to deal with them absolutely direct and not through any export houses. This is the general opinion throughout the trade. I can quite understand that manufacturers on this side appreciate what the export commission houses have done for them, but is this the correct method of doing business for an up to date firm making a first-class line of goods ? If you are buying goods yourselves you naturally prefer to deal direct and thus avoid the middle man's profits. It is only natural that the Englishman, who is just as keen a buyer, dislikes to do business through a second party. Can a commission house

give you direct representation, and what to you is most important, do you in all cases know where your goods go to, and can you properly follow up the trade of such goods that you are now sending abroad blindly, and are you certain that such middle man is not prohibiting the sale of your goods by asking exorbitant prices, and by handling such a large number of goods often in direct competition with each other? It is well known that it is impossible for a man to serve two masters.

Therefore I say again, Do your business direct, deal with the English market as you would with your own. Seek out a good firm on the other side, who will represent you direct, calling personally for you on responsible buyers, carrying samples, and who introduce and sell your products. Make it a condition of your agency that this firm only represent your house in the particular line of goods which you are manufacturing. This is the universal practice of manufacturers' agents in England. The goods should be invoiced on open account to such buyers by the manufacturer, thus keeping his export trade entirely under his own control. If he will follow these lines results must accrue which cannot possibly be obtained in any other way. Therefore if American manufacturers really intend to do a trade with the British Empire, they must do it on the same lines that are usual, not only on the other side, but also in their own country.

The Legacy from Nineteen Hundred to Nineteen Hundred and—Won?

BY A PENNSYLVANIA MERCHANT.

EVERY year there comes to the store an elderly man with white sweeping beard. He never buys more than two articles at a time, and these with an air of diffidence. He has come so often that we now look forward to his coming with certainty.

He is an odd old chap, and yet one is never in the humor to laugh at his eccentricities until some time after his departure, then comes a smile at the recollection of his antiquated manner, and his queer purchase on the last day in December of an Hour Glass and a Scythe. Sometimes we have tried to persuade him to buy two Hour Glasses, or one with a longer run of sand, though it is only once in a while, perhaps once in four years that we can influence him at all. Sometimes we try to get him interested in a Scythe with a shorter blade, but no Bush Hook for him! He will, if anything, hit on the blade with the very largest sweep.

He Becomes Something of a Bore.

Notwithstanding his diffidence, he has a way of puting some very embarrassing questions, which never seem, at the time, that is, at all impertinent. But when he has gone, we think, "What business is it of his, whether or not we have made a will?" that the business may continue without the court's delay. Then we decide, sometime, to-morrow possibly, or next week, but certainly when stock taking is over, to do our duty in that matter—and then forget all about it.

Our Inheritance.

The last visit of the old gentleman left us to solve some propositions, some of which follow:

1. Is it wiser to pay rent with a stock free of debt, or to "own" your building and not your stock?

2. Is it better to buy a small variety and large quantity seldom, or great variety and small quantity frequently?

3. Is it wiser to run a business with a partner, or by one's self?

4. When shall we examine and understand what our insurance policies cover—before or after the fire?

5. Does the buyer pay the freight on goods bought f.o.b. his station?

6. Is it better business policy to put your capital largely in staples, as Nails and White Lead, or to buy sparingly of these and generously of articles that pay a better profit?

7. Are the days numbered when the small dealer will be swallowed by the department store?

8. Are the results from your advertising satisfactory?

Printers' Ink.

While it may be no longer an unanswered question with some, for our part we risk nothing of our integrity in saying that our inheritance of advertising, in the sense of using our newspaper medium, has been a delusion and a snare.

Last year we decided to put our advertising in the shape of good prices. To search the markets for quality and price. To provide racks suitable for displaying, not hiding, goods. So now all our counters are open on aisle side. We make a better use of our windows, and have a liberal display of plainly figured price tickets.

These plans worked out all right, with the exception of the resolution regarding newspaper advertising. So much is printer's ink lauded that it seems to have become a sort of commercial divinity, set upon the altar of universal opinion, and worshiped by the majority. So universal is this sentiment that he who fails to fall down at the popular shrine may as well be numbered with the unprogressive-in-a-rut-Chinese-back-number crowd. We felt this influence. We wanted to be with the angels of enterprise and flutter our wings with the elect. So we joined, or rather slid back into the fold when the representative of our best local medium, whose clean, newsy sheet was a welcome visitor in 3500 homes—at least he said so—called. The price was $2 an inch each insertion. To secure an ad. that could be seen—whether it would be or not comes later—we took 2 inches. As the time was three weeks preceding the Christmas holidays, we put in the following:

ONE PERSON—and this a lady—brought in a clipping and claimed her discount! The man who solicited the advertisement and who also received the copy, being in the store after the paper was printed, saw a Steam Engine on the counter. "Hello," he exclaimed, "you have Engines; been hunting all around for one. Just got one at Jones' (department store). Didn't know you handled such things."

Biddle Hardware Company's Dinner.

ON the night of January 3 the Biddle Hardware Company of Philadelphia gave a dinner to their salesmen and clerks at the Philadelphia Bourse. A large number sat down to a goodly repast, and when the cigars were reached Charles M. Biddle, who presided, took the floor and expressed his pleasure at meeting the force in this way. He referred to the fact that the business, under the name of R. & W. C. Biddle, had been started by his father and uncle in 1837, and had an unbroken record of success for 64 years. He then turned the meeting over to James H. Ritter, who acted as toastmaster for the evening. In Mr. Ritter's speech he referred with pride to the fact that around the table were seated ten men whose connection with the Biddle Hardware Company covered a period of 301 years—being an average of over 30 years per man—a record which he doubted could be excelled by many houses in the country. He then called on those connected with the house for 25 years and over, 20 years and over, 15, 10 and 5 years and over, to rise, and the response showed a tenure of service which was most gratifying.

Speeches were also made by Edward Knight and by a number of the salesmen and clerks, and music was

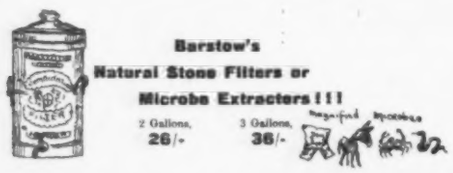
rendered by others, and at 10 o'clock every one went home feeling that a most enjoyable evening had been spent.

TRADE WINNING METHODS.

A HUMOROUS ADVERTISER.

We are in receipt of the following letter from a correspondent in England in which reference is made to trade winning methods on the other side, and an example given:

The weekly articles printed by *The Iron Age* on trade winning methods are read by a great many British readers and many hints are, to my personal knowledge, taken and acted upon. I know a young and enterprising ironmonger who is at the present time stirring up his own district with American ideas taken from *The Iron Age*.



It must not be supposed, however, that all the originality comes from your side of the Atlantic. Although

the British ironmonger is slow to move he sometimes strikes a new idea; and it is only fair that American readers should hear of it. There is an ironmonger in

Leeds, in Yorkshire, who has lately been winning great *kudos* by humorous advertising of quite a special character. He is a reasonably expert draftsman, and has a keen eye for the ridiculous or the humorous. He has

lately taken to illustrating his own catalogue, and is certainly justified by results. Apart altogether from the merits or demerits of his artistic efforts, the mere fact that he makes his own drawings has created a good deal of interest among his customers. Some of the sketches are distinctly humorous.

There is, for example, a rough sketch of a stone filter, some of the microbes extracted being pictured with grim reality. One of these microbes looks like a pair of trousers hanging onto a clothesline; another is a donkey looking very surprised; the third is a crab and the fourth a snake. The humor is not very deep, but it appeals to simple folk, and has created many a laugh by the fireside. The Hardwareman in question assures me that not only does it create laughter but is a safe business bringer. People are constantly coming into his shop asking with a smiling face for his trade catalogue. One way or another, directly or indirectly, he assures me that this catalogue issued on these original lines has helped to extend his business and cement many friendships. I inclose two or three specimens which the editor may perhaps reproduce.

CATTLE SHOW ADVERTISING WAGON.

Thompson & Leigh of Hingham, Mass., used the Wagon shown in the accompanying cut for advertising their business during a recent cattle show held in their town. The Wagon was driven about the grounds and advertising matter was distributed from it. On the Wagon were displayed Wire Fencing, Rubber Horseshoes and Farming Tools. Captives within the Fencing were two razor backed hogs, the strength of the Fencing being illustrated in this way. In the hall on the grounds the firm displayed Tools, Sporting Goods, House Furnishing Goods, Tinware, Paints, &c.

Cattle Show Advertisnng Wagon.

During the show about 5000 pieces of advertising matter were distributed, from which there were gratifying results in the way of increased sales.

GUESSING CONTEST.

As relating to a trade winning method, a Hardware house send us copy of a circular which they have issued announcing that $105 worth of goods will be given away to their patrons. According to the scheme each purchaser of $10 worth or more of goods is entitled to a chance to participate in the free distribution of the following articles:

One Champion Draw Cut Mower, worth	$45.00
One Road Wagon, worth	30.00
One set single Buggy Harness, worth	15.00
One Kitchen Queen Cook Stove, worth	13.00
One Lap Duster, worth	2.00

To decide who are entitled to the articles, a glass jar full of beans is placed in a showcase and each person making a single purchase of $10 worth or more of goods has the privilege of guessing how many beans there are in the jar. The person guessing the nearest to the actual number will be entitled to the Mower; the second nearest the Road Wagon, and so on.

GIVING AWAY TOYS.

A somewhat unusual and novel method of attracting public attention was recently tried by Frank F. Bael of Trenton, N. J., with the following results. He advertised in all of the Trenton papers that on Christmas morning

at 10 o'clock sharp, he would give away all unsold toys in front of his store to the boys and girls of the city. By 9 o'clock the locality of the store was packed with children and grown people. When 10 o'clock arrived the force of employees in the store began to distribute the toys. There ensued a rush so great that one of Mr. Bael's plate glass show windows was demolished, and two persons were badly cut with glass. Mr. Bael, who embarked in the Hardware business in Trenton only a few months since, has thus succeeded in bringing his store to the conspicuous notice of the inhabitants of that city.

European Alarm at America's Manufacturing Progress.

EVIDENCES multiply of the growing recognition on the part of English and Continental manufacturers of the place America promises to take in the world's markets, and there are many expressions of alarm indicating the seriousness of the situation, especially as relating to the industrial position of Great Britain, who finds both home and foreign markets threatened by American competition. As showing the way in which the subject is regarded, we make the extracts given below from a circular recently issued by the conductor of a London technical publication devoted to the encouragement of British industries, who announces his plan for investigating our methods of production with a view of giving information which will be of practical use to English manufacturers. The circular from which the following extracts are taken is entitled

An Address to British Manufacturers.

I, for one, however, utterly repudiate even the merest suggestion of the imaginative theory of British national decadence which is now forming the subject of so much comment among our rivals abroad, causing such articles to constantly appear in American daily and technical papers as "England Alarmed at Our Progress," "America Ousting England in the Iron and Steel Markets of the World," &c. The wish in these "spread eagle" utterances is the father of the thought. The fundamental elements of British character, which has exerted such a sway hitherto in the world, have, it is my conviction, remained unimpaired, and will, I believe, continue to maintain in future that influence it has exerted in the past.

It cannot, however, but be recognized that a condition of stringency in international industrial competition has arisen, for which our past records afford no parallel. It is not my purpose here to enter into any discussion of economics, though it is possible, and indeed probable, that the trade fiscal policy of this country will shortly become the subject of legislative discussion. Whether this be so or not, however, there is one primary duty incumbent upon every journalist at the present time who may be in any way concerned with the maintenance and advancement of his country's industries, and that is, to ascertain and supply the fullest particulars of those conditions which have enabled foreign rivalry to obtain an advantageous position over us.

The inquisitorial researches of the United States Government as to British trade in Sheffield will be present to the minds of many of my readers. Probably, however, few of them are aware of the extent and nature of the informative policy established during some years by the United States in regard to outside commerce, almost totally directed against this country, and having as its object the gradual occupation of our own export markets.

Under these circumstances I have decided upon a very important step; no less than the dispatch of a special commissioner to the chief industrial centers of the United States, whose mission it will be to present a faithful account of those circumstances of industrial activity which, it may be presumed, our own manufacturers are not altogether acquainted with.

Among his general instructions, one of the chief is that which relates to the question of comparative productivity; that is, in other terms, the return upon invested manufacturing capital. It is generally acknowledged that the industrial producet of every £100 invested is much higher in the United States than it is in this country, where it is the common aim of the workmen to work every machine below its total efficiency, and not, as in America, up to its highest standard of production.

It is evident that the question of labor and the conditions of labor prevailing in the United States, compared with the trades unions of this country, is an all important element in this question, and my representative has instructions to give the values, speeds and products of machinery his principal attention. His articles, the first of which is due to appear next February, will be fully illustrated by photographs and drawings, designed chiefly for the attention of employers; while I have in mind an educational feature associated with these, which will consist in the reprinting and free distribution of selected portions of the articles having reference to the position of skilled workmen in this country, and the influence of the trades unions upon its trade and manufactures.

A German View.

The following from a Hamburg paper expresses the apprehension of America's industrial supremacy and suggests a somewhat similar method of obtaining information for the advantage of German manufacturers:

We see, for example, from the table of exports and imports that the United States exported during the last fiscal year goods valued at $1,394,483,682, of which more than $1,370,000,000 was of domestic origin. In these gigantic figures (one must compare them with the export statistics of European countries to realize their full significance) the item of manufactured goods amounted to 31.54 per cent.; that is, nearly a full third of the whole export.

These figures mean more than they alone say. They speak a threatening language; they say clearly and forcibly that the United States, which ten years ago exported more than 80 per cent. of agricultural products and less than a fifth of manufactured goods, to-day draws nearly a third, more than 14 per cent. more, of its entire export from the product of its factories. In other words, the Union is marching with gigantic strides toward conversion from an agricultural to an industrial nation.

Every one who understands the existing conditions and has followed these conclusions, drawn from the best sources and based upon thorough knowledge of the facts, will agree that the threatened danger from America is neither exaggerated nor painted too darkly, but is, in fact, real and serious. But the mere recognition of the peril avails nothing; what is demanded is to face it, to overcome it, or at least to minimize, as far as possible, its efforts. We must ask ourselves whether this is still possible, and, if so, what are the means, the methods, that must be employed to secure a successful result.

There is but one answer to the question. We must fight Americanism with its own methods; the battle must be fought with their weapons, and wherever possible their weapons must be bettered and improved by us. Or, to speak with other, more practical words, Germany—Europe—must adopt improved methods in every department of industry, must use more and more effective machinery. Manufacturers as well as merchants must go to America, send thither their assistants and workingmen, not merely to superficially observe the methods there employed, but to study them thoroughly, to adopt them, and wherever possible to improve upon them, just as the Americans have done, and are still doing, in Europe.

AT a special meeting of the directors of the Holley Mfg. Company, Lakeville, Conn., held on January 7, 1901, Malcolm D. Rudd was appointed assistant secretary and treasurer, with power to perform all the duties of the secretary and treasurer, and to hold office until the annual meeting for 1901.

Export Notes.

FROM OUR BRITISH CORRESPONDENT.

The Growth of Indian Trade.

I RECENTLY drew the attention of American readers to the possibilities of increasing their trade with India. In my last note, I spoke of certain tools that young East Indians are now being trained to use. There are many other lines which American exporters might very well handle.

Lamps to India.

One of them is Lamps. The native Indian as he develops likes to improve his light. In the most primitive Indian communities no iron is used, a clay vessel with a few loose vegetable fibers or a bit of rag and some oil or fat for an illuminant constituting the Lamp. The Saracens introduced Lanterns of glass in the form of slender vessels of cylindrical form which were hung by a collar through the floor of an elaborately decorated brass Lantern. The oil was chiefly vegetable, including cocoanut, sunflower, castor, ground nut and others. But kerosene has changed all that. Its very cheapness has revolutionized even the priests. Twelve years ago some priests proclaimed that kerosene was unclean and prophesied an awful future for those who handled it. But kerosene won hands down. The result has been a growing demand for cheap and simple Lamps. Large quantities of burners are imported which are made up on the spot. Then again wickless Lamps for cooking are being used in growing quantities. Any American manufacturer with a cheap, primitive Lamp, which he can make in large quantities and at an absolutely minimum price, might do worse than make inquiries through Calcutta and Bombay import houses as to his chances. Better still, let him find out exactly what East Indians require in the chief Indian provinces, and it seems probable that he would soon be in possession of a valuable growing market.

Prospective Customers.

There are native Indian firms who are only too anxious to buy and sell through agency or otherwise. American houses who get into touch with them will find that while the native Indian trader appears deliciously suave and simple, you have to get up early to keep your end up with him. I have recently seen a native Indian circular addressed to various Hardware firms in the Midlands, which is in its own way quite delightful reading. Here is an extract illustrating the Indian trader in all his charming effusiveness and cunning. I quote the third and fourth paragraphs of the circular in question:

A Plausible Proposition.

"Although in the beginning we do sole agency and importing work rather freely, yet we assure you that after the lapse of sometimes when you will see the abundance of sale of your goods through us, and the pure ways of our working and our honesty and when also we shall see that your work is of some profit and not troublesome to us and that your ways of working are not disagreeable to us then we shall have no objection to bind ourselves with you and make you be bound with ourselves on ordinary terms only; but whether we may be free or bound as regards to the particular things and the particular town or city to be settled, we should always like to do import business independently; for sometimes having regard to the particular time and the state of the market and with a view to secure our object and to keep our customers in hand, we may be able to sell the accepted goods at a more or less price according to our discretion; the sole agency work can of course be done according to your wishes.

"The drafts or Hundies which may be due by us you be able to receive on the terms being settled, through any bank existing in Delhi. Of course, for any least defect there might be in your goods you will have to be responsible for it. Our usual destination of receiving goods is at the Delhi Railway Station. But if you find any difficulty in sending your goods direct to Delhi you might arrange to give us goods in c.i.f. free Bombay harbor."

A casual glance over this document would likely enough induce an exporter to make inquiries as to the financial reputation of the firm in question and get to business. But there is a clause in paragraph 4 which knocks the gilt off the gingerbread. "Any least defect" is the pith of the clause which the crafty Hindoo takes advantage of to the very full. The slightest defect caused, no matter how, would lead to endless correspondence and to close the transaction most exporters would make a more or less liberal rebate, which is precisely what the wily Indiaman wants. There are other lines in connection with India which I will refer to later on.

Domestic Hardware in France.

I recently drew the attention of American readers to the importance of conciliating architects. It would seem that this precaution is just as necessary in France as in Great Britain. A firm has recently started business in Paris for the sale of sanitary ware of British, American and German manufacture. British firms are not directly represented, but British goods are bought through a Hamburg house, shipped to Hamburg and completed with German fittings. The company in question have a large showroom in which they exhibit Lavatories, Baths, Flush Cisterns, fittings and sanitary appliances of all kinds, making a specialty of installations for hospitals. The Taps, Pipes and Connections are of German make and are light and nickel plated. The enameled iron Baths are also German. The only American goods shown are those manufactured by the Trenton Pottery Company of Trenton, N. J. They are mostly porcelain Baths and Lavatories, but the metal fittings are German. The difficulty seems to be precisely that which I indicated some months ago—viz., the difficulty of inducing the architects to specify the particular goods shown by this company. I imagine that Plumbing and Sanitary Ware made in America can hold its own with German on neutral territory.

Trade with Russia.

It is difficult to exaggerate the importance of Russia as a future large purchaser of hardware and metal goods. Unless one travels through Russia, it is impossible to realize the strides made by the chief towns in Russia in the direction of domestic conveniences. A decade ago Russia was semi-civilized; to-day travelers prefer Russia from the point of view of comfort to Spain. Even so far east as the Caucasus, young towns are buying electrical apparatus such as telephones; good Hardware and Cutlery is being sold in the shops and a middle class is springing into existence with an immense untouched purchasing capacity. A powerful syndicate aided by foreign capital is in course of formation to monopolize the Lamp industry. The Lamp manufacturers of Warsaw recently combined and erected at Nowaja Praga a factory up to date in all its fittings and employing 4000 workmen. It is stated upon good authority that the St. Petersburg and Moscow manufacturers are following suit, and that ultimately the Lamp makers of Warsaw, Moscow and St. Petersburg are all to be amalgamated, thereby securing a gigantic Lamp monopoly in Russia. The Government at the same time is being urged to raise the duty upon foreign Lamps 50 per cent., thereby excluding as far as possible Lamps made by Great Britain, Germany and America. This shows what an enormous demand there is in Russia for Lamps, and as there is many a slip 'twixt the cup and the lip, there is no reason why, in the meantime, Lamp manufacturers who have perfected their manufacturing arrangements should not drive a good trade with Russia.

But the demand for Lamps is small compared with the demand for agricultural implements. The rural councils (zemstvos), are organizing a general purchase of agricultural implements from abroad, to be sold in the various districts concerned. The attempt has already been made by the Orloff zemstvo. Its agent entered into direct communiation with numerous foreign firms, obtaining from them a considerable reduction in

prices, and buying 90,000 roubles' worth, the implements being distributed among 40 district or Government stores. These rural councils are at the present time buying annually four million roubles' ($2,060,000) worth of agricultural implements and it has been decided to send representatives abroad to buy implements and machinery direct from foreign manufacturers, to the Western European countries and, if it be found necessary, also to America. The actual method of buying the different implements and machinery is best illustrated by the Kazan Council, who first collect preliminary orders from the rural councils and on the agent's return price-lists are issued and sent to the different buying centers. Then the final orders are given to the manufacturers with instructions to send them to the different stations according to order.

Tools for Australia.

The similarity between building construction in California and Australia has given American manufacturers a marked advantage in supplying Tools to Australia in general and New South Wales in particular. British manufacturers are much concerned with the loss of trade in this line in Australia and are striving hard to regain it. Two or three years ago a Sydney importing house sent a case of specimen American Tools to a British maker, mentioning the market rates and asking for quotations. The British firm replied that they could supply goods equal to samples at much lower rates, but did not care to add fresh lines to their business. As the pressure of trade in the factory is now relaxed we may look to see some attempt on the part of British makers to push Australian trade. British Hammers are now being sold in Australia in increased quantities.

United States Exports and Imports.

FOR the purpose of showing the comparative progress in the foreign trade of the United States as compared with other countries the following table has been prepared, showing both exports and imports. It is based upon statistics covering corresponding periods in 1899 and 1900, which to facilitate comparison have been reduced in each instance to the monthly average. The periods in 1899 and 1900 for which the computations are made cover portions of these years, in most instances 9, 10 or 11 months, although some of the less important are for shorter periods, according to the promptness with which the various governments obtained and issued official reports:

EXPORTS.

Taking the principal countries as alphabetically arranged, we find the volume of exports of Argentina, Austria-Hungary, Germany, Mexico and Portugal substantially unchanged, while losses more or less pronounced are seen in the returns from Belgium, France (both important competitors), British India, Italy and Spain. Increases are shown as follows: Canada and Egypt about 20 per cent, United Kingdom and Russia about 10 per cent. and Switzerland a little over 5 per cent., while the United States, on the largest and a stupendous volume of business, is credited with an increase of about 15¾ per cent.

It is specially interesting to note that late official figures, just announced, give the total exports for the calendar year ended December 31, 1900, as $1,478,050,854, or $202,582,883 in excess of the total for 1899, the highest previous record. It should be understood, however, that while the figures above do not include the exports of gold and silver, considerably over $100,000,000, they do include the total of foreign merchandise reexported, approximately $25,000,000, which, however, does not enter into the computations in the table of monthly averages below.

In no month during the year did the aggregate fall below $100,000,000. The total for December, $145,994,606, made a new record for that or any one month. The imports for the year amounted to $829,052,116, or $30,084,706 in excess of importations in the 12 months of 1899. The balance of trade in favor of the United States for the period was $648,998,738, which was an increase of $172,498,177 over that of 1899.

The total foreign trade of the United States in the 12 months was valued at $2,307,102,970, which exceeded by $252,667,589 that of the year 1899.

IMPORTS.

Without analyzing the imports, with which we are not so much concerned, it is, nevertheless, interesting to observe the great values imported by our nearest neighbor, the United Kingdom, their average imports per month for the 11 months of 1900 being $211,151,181, against $196,579,727 for 1899. What is also a fact not discernible in these figures is that, of the importations into the United States, *manufacturers' materials* were more freely imported than ever before and formed a larger share of the total imports than on any former occasion, and, *per contra, manufactured articles* were more freely exported than ever before and formed a much larger share of the total exports than at any previous time. Put in another form, where our imports increased it was for materials needed in manufacturing, which, of necessity, had to come from abroad, while our greatest export increase was in manufactured goods.

	Average monthly Exports.		Average monthly Imports.	
	1900.	1899.	1900.	1899.
Argentina	$13,136,666	$12,611,222	$9,377,777	$9,355,222
Austria-Hungary	31,795,400	31,001,300	28,088,700	27,017,000
Belgium	28,245,600	29,096,500	33,772,100	34,433,500
Canada	17,674,333	14,664,666	15,912,000	14,566,666
Egypt	6,352,625	5,113,500	5,065,375	4,145,625
France	64,707,400	65,166,600	70,388,300	71,610,200
Germany	79,340,000	79,335,888	105,779,888	105,779,333
British India	25,377,600	28,801,200	18,403,600	18,664,800
Italy	21,085,700	22,210,900	24,816,900	23,933,100
Mexico	5,526,000	5,211,500	4,780,500	4,242,500
Portugal	2,918,600	2,725,000	5,654,800	4,876,000
Russia	24,494,166	22,378,166	24,073,500	24,805,666
Spain	10,892,333	11,354,333	13,267,222	13,885,777
Switzerland	13,078,444	12,337,444	17,456,333	17,933,888
United Kingdom	118,494,545	107,335,454	211,151,181	196,579,727
United States	118,993,575	102,867,082	69,131,955	66,203,052

Association Work.

FROM a recent circular issued by Fred H. Cozzens, secretary, to the members of the Michigan Retail Hardware Dealers' Association, we make the following extracts:

The jobbers and manufacturers with whom we have had occasion to deal since our last convention have uniformly responded to our requests in a courteous manner, although at times with evident reluctance.

Our present membership, about 300, should be doubled before August, when the annual meeting takes place, and to do this every member must constitute himself a committee of one to secure at least one new member before that time.

Probably there are some dealers in your town who are not now members. For your own good, as well as for the good of the cause, won't you please hand them one of the inclosed application blanks. See to it that they fill it out and send it to the writer at once, and remember that only as we increase in numbers can we expect to maintain our present strong position and influence. So do what you can to help the officers in this work.

Thus the good work moves on, but each State affiliated with the Interstate must keep its dues paid up promptly and continue to grow if the thing is to continue. It is not too early now to plan to attend the next meeting, to be held in Detroit, Wednesday, August 14, 1901, for it will be the most important gathering ever held in the State.

If any thing goes wrong; if any jobber forgets himself and solicits or sells your customer, fill out a complaint blank, send it to the office, and it will have prompt attention.

We cannot help you unless you tell us your needs.

S. M. McCoy has succeeded McCoy & Blanchards, Hardware and Stove merchants, Allerton, Iowa.

A January Advertisement.

January is one of the quiet months in the Hardware Business.

To help it along we have generally allowed
HEATING STOVES,
HORSE BLANKETS,
SLEIGH BELLS,
SKATES AND
ALL SEASONABLE
GOODS
to go at a better figure than early in the season, rather than carry over till next fall.

Wishing you all a Happy New Year and looking forward to 20th Century with signs of good times: we are yours for business.

Theo. Crowell,

The Hardware Man on the Corner.

FROM Theodore Crowell, Kane, Pa., who gives a good deal of attention to his advertising, in connection with which he uses the phrase, "The Hardwareman on the Corner," we have the following reference to advertising methods, the same being illustrated by an advertisement presented herewith, half size:

Inclosed find advertisement for first week in January. If the weather should be very cold about the fifth of the month, I would change it to Heating Stoves and Horse Blankets; if a heavy fall of snow, to Sleigh Bells and Snow Shovels; and if very warm for the season we might run in an advertisement on Venetian Enameled Ware, &c.

The arrangement of this advertisement will be suggestive to our readers, who will recognize it as a striking and business like appeal for trade.

Buyers' Want Books.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., have issued for 1901 their tenth annual want book, which is larger and more comprehensive than heretofore. Each right hand page is ruled for noting goods wanted, while the opposite pages contain illustrations, descriptions and prices of many goods, being arranged according to corresponding pages in their large No. 6 catalogue. An alphabetical index of all the goods listed is given.

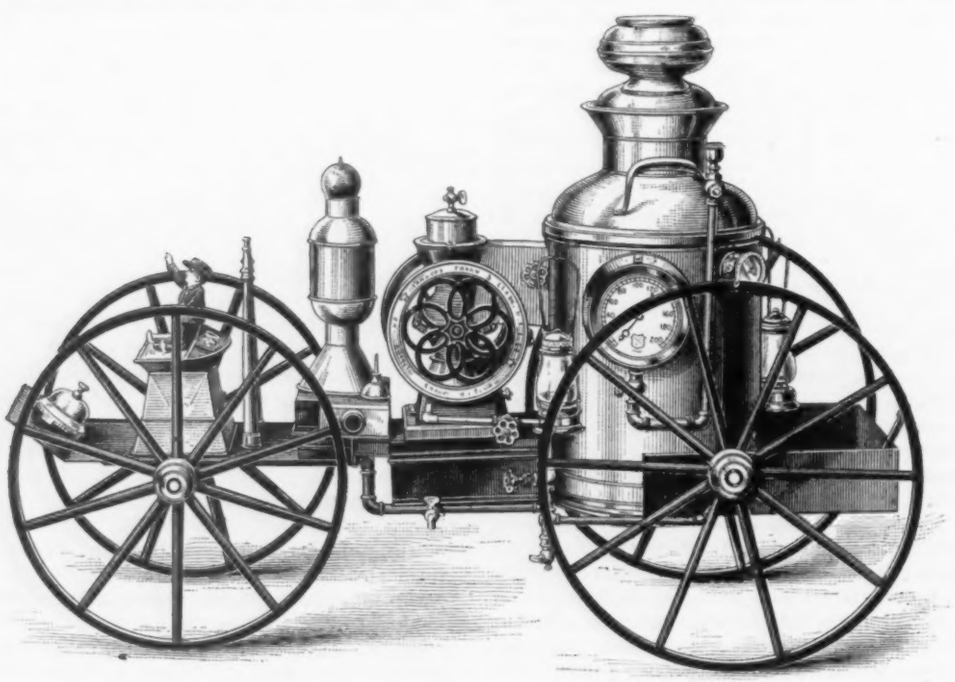
Knapp & Spencer Company, Sioux City, Iowa, are distributing among customers a want book designed to be of practical use to merchants in making memoranda of goods wanted. Four pages are devoted to the Western freight classification of the common goods carried by the company. All the other pages are designed for making memoranda of goods.

Peters Cartridge Company.

THE PETERS CARTRIDGE COMPANY, Cincinnati, Ohio, on the 10th inst. gave their second annual dinner to their traveling representatives and local office force. The affair took place at the Business Men's Club. O. E. Peters, president of the company, presided. An excellent *menu* was served. Remarks pertinent to the business were made by all. The arrangements for the affair were in the hands of J. H. McKibben, secretary of the company. Those present were T. F. Norton, Kansas City, Mo.; M. Kaufman, New Orleans, La.; J. E. Avery, Atlanta, Ga.; T. H. Keller, New York; T. H. Keller, Jr., New York; John Parker, Detroit, Mich.; J. S. French, Jackson, Ohio; John H. Mackie, Madisonville, Ohio; A. M. Beekley, F. C. Tuttle, B. B. Tuttle, L. R. Myers, Ad. Roll, O. E. Peters, G. M. Peters, J. H. McKibben, Cincinnati; George King, King's Mills, Ohio.

Fire Engine Window Display.

During a firemen's association convention, held at New Castle, Pa., Dickson & Co., Hardware merchants of that city, exhibited in one of their show windows the fire engine herewith illustrated. It was made to stand on four baby carriage wheels. A 10-gallon Milk Can surmounted by a nickel plated Cuspidor formed the boiler, upon which, among other things, was a Steam Gauge and a small Clock. Two small brass Lanterns were suspended from the boiler. The piping was connected with the necessary nipples, unions, tees, reducers, elbows, and supplied with valves, cocks, &c. The pumps were represented by a Coffee Mill resting on a Cash Box. The air compressor in front of the pumps was composed of Funnels and a Milk Pail, with a green electric light at the top. At the base stood an oiler. Two Hose Nozzles stood behind the driver's seat, which was made of two Bread Pans, upon the top of which was a Crumb Tray for a seat. A chamois skin served for a seat cushion. A Call Bell stood on the foot board. It is hardly necessary to say that the engine attracted a great deal of attention.



George D. Kugel & Sons, Hardware and Leather dealers, Philadelphia, Pa., have dissolved partnership by mutual consent. C. E. Kugel and D. Kugel, trading as Kugel Brothers, will continue the Hardware business at 2041 Germantown avenue. Geo. D. Kugel, who retires from the firm, will continue the Leather and Hardware business at the original store, 133 West Girard avenue, Philadelphia.

Gray & Dudley Hardware Company's Annual Banquet.

THE sixth annual banquet of the Gray & Dudley Hardware Company, Nashville, Tenn., was given on the 26th ult., at the Tulane Hotel, and was a complete success. About 125 employees of the firm were present. This was in striking contrast with the first banquet of the firm, at which there were only 40 employees.

R. M. Dudley, who was the toastmaster of the occasion, called the assemblage to order and introduced John M. Gray, Jr., the vice-president, who delivered an address of welcome. He said he was glad to have them all come together once a year in this way. It promoted a loyal feeling toward the firm and redounded to the benefit of both employer and employee.

Mr. Dudley then addressed the gathering congratulating the employees on their hearty co-operation and support during the past twelve months. He referred to the striking growth of the business of the company since their organization six years ago, their motto having been "Push, Progress and Prosperity." During the preceding six months, he stated, the company had sold more goods than they formerly sold in twelve months.

J. T. Jenkins, treasurer of the company, responded to the toast of "The Credit Man and the Traveling Man." He drew an interesting and amusing picture of the salesman and the buyer who wanted to obtain the best quality of goods at the lowest prices, on the greatest time and the most indefinite date, and whose paramount duty seemed to be to obtain extensions on all his obligations. He then took up the credit man and gave a clear and distinct outline of his duties.

R. Houston Dudley, Jr., responded to the toast, "What We Are and What We May Be," referring to the position now held by the company among the prominent Hardware houses of the country

The following toasts were also responded to: Will C. Pollard, "Playing Around Louisville Like a Hoop Around a Barrel;" Thomas Dale, "A Charge to Make I Have;" W. H. Fickling, "The Retail Department of the Greatest Hardware Store in the World;" W. H. Buchanan, "Changing Territory;" James Gowen, "Our Crew;" John M. Pichard, "Tribulations of a Floor Walker, in Verse;" R. H. Birthright, "Our Factories;" George W. Everett, "Twentieth Century Traveling Man;" H. T. Hill, "The Poor Moneyed Man;" Fred. L. Martin, "The Specialty Man;" B. W. Haverfield, "The Art of Window Dressing;" Frank M. Gray, "The 'Moonlight' vs. 'Electric Light' Towns;" Jake G. Boyles, "Bank Balances and Trial Balances."

Most of these addresses were humorous and all were well received. The one that aroused the most enthusiasm was an original poem by George W. Everett, in response to the toast, "The Twentieth Century Traveling Man," describing what he sees through the half open doors of the dawning century. The poem abounded in happy hits at the traveling men. The Gray & Dudley band, of 24 pieces, furnished the music of the evening.

Hay-Budden Mfg. Company.

THE HAY-BUDDEN MFG. COMPANY, 254-278 North Henry street, Brooklyn, N. Y., manufacturers of the first Solid Wrought Anvils with steel face in one piece made in this country, aside from their large domestic business, are now exporting these Anvils in increasing quantities to various points in Australia, New Zealand, South Africa, China, Chili, Russia, Mexico and Canada. The Anvil is fully warranted, and competes with the well-known Peter Wright Anvil made in Dudley, England, which so long dominated this market, and which has been largely superseded by the Hay-Budden Anvil. In the foreign trade it also comes in successful competition with a number of other good Anvils made abroad.

This factory has been entirely rebuilt since the fire of March 3 last, which destroyed the main building and a portion of the tools and machinery. A fine new fire proof iron structure, covering a space 103 x 200 feet, is now in thorough running order. There are also three or four outside buildings connected with the plant in operation which the fire did not injure. The company have a plot of ground, 260 x 200 feet, the balance of which is reserved for further expansion. They expect in the near future to put in more furnace capacity and additional hydraulic tools. In the basement of the front of the main building they have installed a complete electrical equipment for artificial lighting. While the manufacture of Anvils is their principal business they also make a specialty of Steel Rings without a weld and Die and Steel Forgings.

H. D. Smith & Co.

H. D. SMITH & CO., Plantsville, Conn., and 253 Broadway, New York, established in 1850 and radically reorganized about a year ago with an abundance of new capital, while still manufacturing complete lines of Drop Forged material for Carriage and Wagon construction, have for some time been gradually putting on the market articles of a general Hardware character, principally Tools. Among the goods referred to are Carpenters' Pincers and Shoeing and Farriers' Pincers, Ring Bolts, &c. Other goods of similar description will be added from time to time, the next in order being a line of Cold Chisels, which will be ready in a few weeks. These Chisels will be drop forged from octagon hammered crucible steel stock with turned polished heads and polished blades in ⅜, ½, ⅝, ¾, ⅞, and 1 inch sizes, to be priced by the pound. The president of the company, Lucius V. Walkley, and their strong financial support, has placed the active direction of their affairs largely in the hands of the vice-president, Winfield D. Walkley, his nephew, with headquarters in New York, who is concerned specially with the marketing of the goods. At the factory in Plantsville, Conn., Louis H. Schmitt, the new secretary of the company, gives his entire time to the various details connected with the manufacturing. Both vice-president and secretary were for a long period identified with the New York branch of the Peck, Stow & Wilcox Company.

Calendars.

THE STANLEY WORKS, 79 Chambers street, New York, manufacturers of Stanley's Steel Butts, Hinges, Door Bolts, Shelf Brackets, &c.

SNELL MFG. COMPANY, Fiskdale, Mass., manufacturers of Ship Augers, Auger Bits, Boring Tools, &c.

J. ALLEN MYERS, Bryan, Texas., Hardware and Stove merchant.

HOWARD SMITH COMPANY, Houston, Texas, dealers in Heavy Hardware, Mill Supplies, &c.

J. S. ENTLER, Bonaparte, Iowa, dealer in Stoves, Tinware, &c.

R. H. SUETTINGER, Two Rivers, Wis., dealer in Hardware, &c.

Price-Lists, Circulars, &c.

THE AULTMAN COMPANY, Canton, Ohio: Catalogue D, 1901. This relates to Chain Belt Appliances, Coal Handling Equipment, Stone Crushing Machinery, Power Transmitting Machinery, &c.

THE BOSTON BELTING COMPANY, Boston, Mass.: Mats, Matting and Treads. A 12-page booklet is devoted to these goods, designed for use by railways and steamships.

JOHN S. MENAGH, Jersey City, N. J.: The Menagh Price System. A four-page folder illustrates and describes the Price Card Holders, Price Books, &c., comprised in the system.

THE CLEVELAND HARDWARE COMPANY, Cleveland, Ohio: Buggy Irons. A catalogue illustrates Rolled Steel Body Hangers, Roller Chafe Irons, Pad Steps, &c.

M. G. RODEARMEL, Minneapolis, Minn.: Illustrated pamphlet of goods for which Mr. Rodearmel is manufacturers' agent.

THE INDIANA MFG. COMPANY, Peru, Ind.: Illustrated catalogue and price-list of their lines of Northern Star

and Indiana hard wood Refrigerators. The company's Northern Star line has been on the market for many years and is well known in the trade. The styles shown in the catalogue comprise a full variety to suit all necessities. The company manufacture Refrigerators with galvanized iron linings and also certain sizes of porcelain tile lined. The Indiana line, although cheaper, is made with the same arrangement for circulation as the Northern Star and in every way care has been taken to secure a perfectly satisfactory Refrigerator.

G. P. Dowling Hardware Company, Ozark, Ala.: Dowling Heel Scrapes. A pamphlet is devoted largely to testimonials from merchants handling these goods.

Ideal Mfg. Company, New Haven, Conn.: "Ideal Hand Book of Useful Information for Shooters." This is catalogue and price-list No. 13 and contains considerable new matter.

Scully Steel & Iron Company, Chicago, Ill.: "January and February, 1901, Stock List." The list includes Iron, Steel, Tools, Machinery, &c.

The Bean-Chamberlin Mfg. Company, Hudson, Mich.: Hudson Bicycles, Bike Wagons, Automobiles, Gears, Wheels, &c. A catalogue illustrates and describes these goods.

The McIntosh-Huntington Company, Cleveland, Ohio, are distributing separate catalogues relating to Fishing Tackle and Bicycles for the season of 1901. These are referred to as being very complete.

The Wilke Mfg. Company, Anderson, Ind.: Folder containing testimonials in regard to the Wilke Porcelain Refrigerators from those who have used them.

The National Cutlery Company, Philadelphia, Pa.: A 1901 illustrated catalogue and price-list devoted to a large line of Shears, Scissors, Snips, &c.

Trade Items.

Thomas A. Lamotte has become identified with Sperry & Alexander Company, 300 Broadway, New York, and will in their interest visit the Western trade in the territory which he has formerly covered. Mr. Lamotte is widely known among the trade from his connection with it as manufacturers' agent at Philadelphia, and his subsequent relations to it with Chicago as his headquarters. He will have the best wishes of many friends in this new departure.

A method of securing the intelligent co-operation of their salesmen is referred to by the Lockwood-Taylor Hardware Company, Cleveland, Ohio, in a recent letter. After pricing up the copies of their new catalogue which their traveling salesmen were to use, a conference was had between them and the compiler of the catalogue, the buyer, and the superintendent of the sales department. All were gathered around a long table and went over the catalogue page by page, discussing the quality of the goods illustrated, asking questions and receiving suggestions. Several days were spent in this way, at the conclusion of which a banquet was served of 32 covers. The speeches of the salesmen at the banquet testified to the value of the conference, and old and new salesmen alike were enthusiastic in praise of its value.

In our last issue, in the reference to the Pocket Cutlery manufacturing concerns of the country, the name of the Carrier Cutlery Company, Elmira, N. Y., was omitted. This company were established in 1895 and are enjoying a constantly increasing trade.

George H. Bishop of Geo. H. Bishop & Co., Cincinnati, Ohio, and Lawrenceburg, Ind., starts January 20 on an extensive combined business and pleasure itinerary, including the Pacific Coast and Honolulu, H. I.

At the annual meeting of the stockholders of the Miller Bros. Cutlery Company, Meriden, Conn., held on the 15th inst., the following directors were elected: Henry J. Lewis, Charles L. Rockwell, Geo. W. Lyon, George Rockwell and Charles F. Rockwell. The directors subsequently elected the following officers for the coming year: Charles L. Rockwell, president; Charles F. Rockwell, secretary and treasurer.

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Keeping Track of Window Glass Stock.

THE Irwin Paint & Glass Company of Dayton, Ohio, who job large quantities of Window Glass, have in use a card system for keeping track of their stock of Glass. The case shown in Fig. 1 is used in connection with the system and is located directly behind the buyer's desk, representing a stock of from 15,000 to 20,000 boxes of Window Glass. The case, including the base, is 5 feet 10 inches in hight. The width is 6 feet 1½ inches and the depth 3½ inches. It is divided into 1056 openings, each 1½ inches wide, 2 inches high and 3 inches deep. The horizontal divisions are of ½-inch wood, while the perpendicular divisions are galvanized iron slipped into saw grooves made in the horizontal wood divisions.

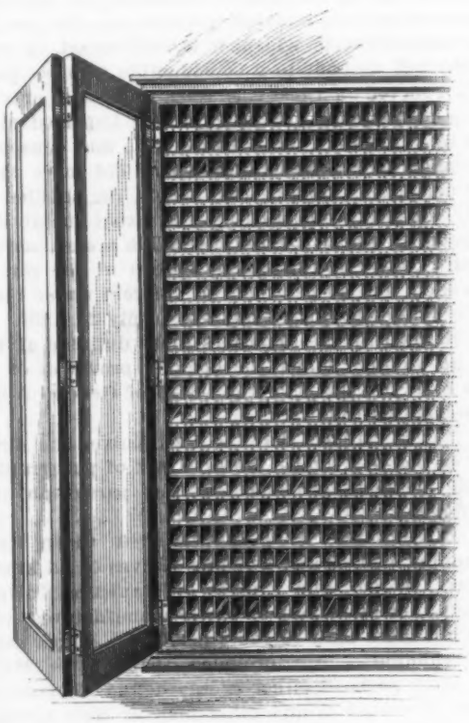


Fig 1.—Glass Stock Case

The openings are marked with figures below, giving the sizes of Glass the cards represent. Single strength sizes are marked in red, and double strength sizes in black. Glass of the same price is designated by parenthetical marks on the horizontal strips below the openings, so that one can tell at a glance what sizes it is necessary to instruct the cutters to cut from, if the right sizes are not in stock. If the company has, for instance, an order for ten boxes 30 x 32 and has plenty of 30 x 38, they see at once that there is no loss in cutting the latter size down.

After each size on the case there is designated in small pencil figures the number of boxes which is considered a normal stock, so that it can be easily seen whether the stock is low or full. Each opening will hold 250 to 300 cards. Each card represents one box of Glass, which shows the size, strength, quality and the date when the box was received.

The cards are illustrated full size in Figs. 2, 3 and 4. When Glass is received and put into stock, new tickets are marked with rubber stamps, showing the size and date of receipt, and are put into the case at the bottom of the different piles. Different colored tickets are used to represent different kinds of Glass. Thus, as in Fig. 2, white tickets are used to represent single strength B Glass; red tickets, Fig. 3, single strength A, and yellow tickets, Fig. 4, double strength A Glass. The company do not carry double strength B quality. If it should be desirable to carry double strength in two qualities, the same opening could be used for both, employing different colored cards to distinguish them.

S. S. B.

SIZE:

10 - 14

RECEIVED

JUN 29 1900

TAKEN OUT OF STOCK

SEP 3 1900

THE IRVIN
PAINT & GLASS CO.

Fig. 2.—White Ticket, Single Strength, B.

S. S. A.

SIZE:

12 - 15

RECEIVED

MAR 7 1900

TAKEN OUT OF STOCK

JUL 21 1900

THE IRVIN
PAINT & GLASS CO.

Fig. 3.—Red Ticket, Single Strength, A

When an order is received for Glass tickets representing the different boxes ordered, one ticket for each box, are taken out of the case, from the tops of the various piles, and the date when they are taken out is stamped on the tickets, as shown in Figs. 2 and 3. Warehouse men are instructed not to get out any Glass without receiving the tickets.

When the stock of any size is entirely exhausted a stiff card is put into the opening, diagonally, to call the buyer's attention to the fact. When large lots of Glass are sold for a fixed future delivery, the tickets are at once taken from the case and kept with the order. This insures having the Glass on hand when the time arrives for shipping it, and shows the buyer the correct condition of the stock at all times.

The crowning feature of the scheme is that the case is always up to the minute, the tickets being put in as fast as Glass is received, and taken out as fast as orders are booked. The case is not made up the next day, it is explained, or two or three days after, as the old fashioned stock book is apt to be.

The company refer to the additional advantages of the system as follows: By wheeling around in his chair, without getting out of it, the buyer can see

What Glass he is out of;

What Glass he is low on;
What Glass he is overstocked on;
What sizes are the same price;
How much he ought to have of each size;
What is salable or unsalable, the dates on the tickets showing how long it has been in stock;
What sizes to let alone entirely;
What the largest sellers are--to stock on heavily when the market is right.

It is obvious that the system can be used in Hardware establishments to keep track of stocks of Nails and other goods.

Fig 4.- Yellow Ticket, Double Strength, A.

The company recently made a unique window display with cards representing Glass sales of last year. About $45,000 worth of orders were represented by tickets heaped up in one of their show windows, with several boxes of Glass as an appropriate background. A placard above called attention to the exhibit.

Iowa Farming Tool Company.

IOWA FARMING TOOL COMPANY, Fort Madison, Iowa, have, during the past year, been adding new and improved machinery in their finishing and polishing departments, and have just removed these departments into a new three-story brick and stone building, 50 x 150 feet. This change also involves a considerable enlargement of their forging department. Although the new finishing shops are materially larger than the old ones, the company have recently completed still another finishing shop building, 40 x 162 feet, which will be in operation by January 1, so as to put the company in a position to care promptly for the rush orders which always come in the winter and spring. This new building will be run and lighted by electricity.

The Mallory-Wheeler Company's Catalogue.

THE MALLORY-WHEELER COMPANY, New Haven, Conn., have issued a catalogue of Padlocks, embracing a large and varied line of Steel, Brass, Bronze, Scandinavian, Wrought Iron and Gun Metal Padlocks. Among the new features embodied in the catalogue is giving the weights per dozen of the various Locks packed, to enable customers to make up shipments of 100 pounds or more. A number of Locks also have been added to the assortment. The manufacturers call attention to the fact that they have manufactured Wrought Iron Padlocks for 67 years and that their Locks were the first to drive the old English Locks from the market, and that they now present the largest line of Padlocks made by any one manufacturer in the country.

The Duty on Pocket Knives.

THE Treasury Department is in receipt of an opinion of the Attorney-General to the effect that the Government has no grounds for further litigation as to the dutiable classification of certain grades of Pocket Knives which were recently made the subject of a decision of the United States Circuit Court of Appeals adverse to the Government on a notable case which has been pending in the courts for nearly two years. In view of the Attorney-General's opinion refunds to the importers have been directed, which, it is understood, in the aggregate will amount to a considerable sum, as the suit in point served as a test case for a number of entries.

The merchandise in the case was imported at New York by Silberstein, La Porte & Co., and consisted of unfinished Pocket Knives valued at not more than 40 cents per dozen, "having two blades, the handles being poorly finished, consisting of the usual metal linings without the bone or pearl scales which are ordinarily attached." Duty was assessed thereon at the rate of 5 cents each, and 40 per cent. ad valorem under the proviso to paragraph 153 of the act of July 24, 1897. They were claimed by the importers to be dutiable at 40 per cent. ad valorem under the opening provision of paragraph 153. On this point the Board of General Appraisers decided as follows:

> "It is claimed that the Pen Knives are dutiable at 40 per cent. under the first part of paragraph 153. The pertinent provisions of this paragraph are as follows:
>
> "'Penknives or Pocket Knives, Clasp Knives, Pruning Knives and Budding Knives of all kinds, or parts thereof, and Erasers or Manicure Knives, or parts thereof, wholly or partly manufactured, valued at not more than 40 cents per dozen, 40 per centum ad valorem; . . . provided, that Blades, Handles or other parts of either or any of the foregoing articles, imported in any other manner than assembled in finished Knives or Erasers, shall be subject to no less rate of duty than herein provided for Penknives, Pocket Knives, Clasp Knives, Pruning Knives, Manicure Knives and Erasers valued at more than 50 cents and not more than $1.50 per dozen.
>
> "The Penknife differs from common Penknives in that the handle, which is poorly finished, consists of the usual metal linings without the bone or pearl scales which are ordinarily attached. It is in evidence that the Knives are dealt in and used in this condition, as well as with scales attached. But, however they may be, the articles are undoubtedly Knives wholly or partly manufactured, rather than Blades, handles or other parts of Knives. We sustain the claim that said Knives valued at not more than 40 cents a dozen are dutiable at 40 per cent. under paragraph 153."

The Government took an appeal from this decision to the United States Circuit Court, which affirmed the decision of the Board of General Appraisers, but owing to the large number of importations of this class of goods the Treasury officials were unwilling to accept the decision and took the case up to the United States Circuit Court of Appeals for the second circuit. This court has now concurred in the decision of the court below, and the Attorney-General, after careful examination, has advised the Department that no further proceedings will be directed in this case. Assistant Secretary Spaulding has therefore instructed the collector of customs at New York to forward to the Department the usual certified statements for refund of the duties exacted in excess upon these importations, the importers having paid under protest the full duties levied by the collector.

AT the annual meeting of the stockholders of the Cattaraugus Cutlery Company, Little Valley, N. Y., held on the 7th inst., the following persons were elected directors for the ensuing year: J. B. F. Champlin, Tint Champlin, A. E. Darrow, E. E. Kelley and C. L. Wilson. The Messrs. Champlin and Mr. Darrow were elected president, secretary and treasurer, respectively.

Store Arrangement.

Gray & Dudley Hardware Company.

THE GRAY & DUDLEY HARDWARE COMPANY of Nashville, Tenn., are now occupying their fine new building. It extends from College street, upon which the city's retail business centers, to Market street, upon which nearly all of the wholesale houses are located. The building is about 225 feet long, with a frontage of 55 feet on one street and 75 feet on the other. The store has been built with a view to great strength, the foundation resting on the rock formation 42 feet below the surface. Between the basement and the third floor 150 iron columns were used for supports, while the columns on the floors above are of wood.

The building is divided into departments to correspond with the company's large illustrated catalogue, which was issued the latter part of 1899. The accompanying plans show the arrangement of the first and second floors. The entire first floor is occupied by the office, retail department, shipping and receiving rooms.

The office is referred to as one of the most attractive features of the establishment, being exceptionally well arranged and complete. It occupies a floor space of 30 x 72 feet, and is provided with modern facilities for the rapid handling of the company's large business. Included is a private telephone system, and ten long distance outside telephones with an operator. There are a number of small private rooms for the officers of the company.

The second floor is devoted to the wholesale sample room, the Cutlery and Sporting Goods departments, catalogue room and the wholesale packing room. The latter is 75 feet wide by 170 feet long, and is well arranged, fully lighted and most convenient. From the packing room to the ground floor is a chute, which is used for running down cases, kegs and other goods direct to the shipping rooms and the wagons.

The third floor is regarded as one of the most important in the house. It is used as a Shelf Hardware floor, and in this department is found all of the Shelf Hardware including Locks, Bolts, Tacks, Axes, Saws, &c. The Notion department is also on this floor.

The fourth floor is taken up largely by the Saddlery department, including such goods as Horse Collars, Bridles, Harness, Saddles, Collar Pads, Leather, &c.

The fifth floor is occupied by the Blacksmith and Wood Goods department. On this floor is carried a large stock of Wheels, Rims, Hubs, Spokes, &c. Railroad Supplies, including Wheelbarrows, Shovels, Scoops, Picks and similar lines, are also carried on the fifth floor.

The sixth or top floor is devoted to Lamps, Refrigerators, Enameled Ware, Sewing Machines, and to other House Furnishing Goods, besides the Toy department.

In the basement the stock of heavy goods is carried, such as Nails, Horseshoes, Wire, Plows, &c.

The building is heated throughout by steam, and is lighted with electricity. It is provided with three large freight elevators and a passenger elevator and is equipped with automatic fire sprinklers and has automatic fire doors to each elevator.

The company employ 27 traveling salesmen and do a large and increasing business. The officers of the company are R. M. Dudley, president; J. M. Gray, Jr., vice-president; R. H. Dudley, Jr., secretary, and J. T. Jenkins, treasurer.

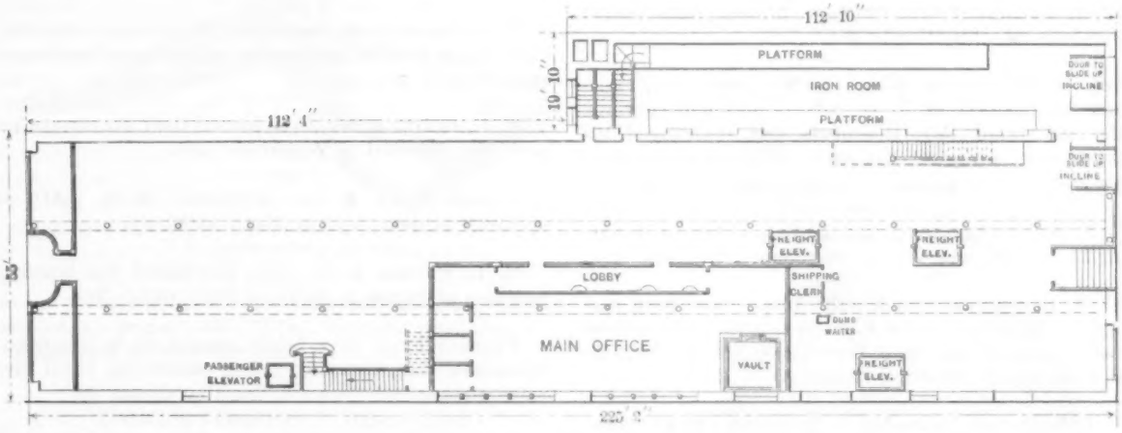


Fig. 1.—First Floor.

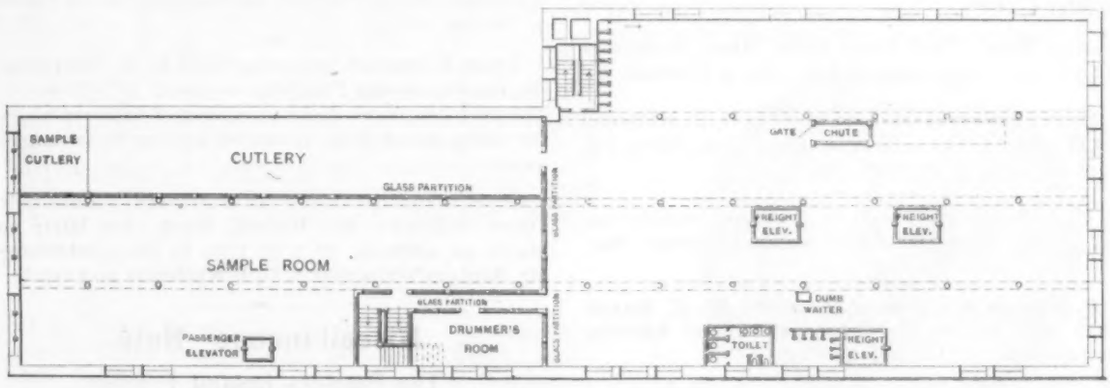


Fig. 2.—Second Floor.

The Northern Hardware & Supply Company, Sault Ste. Marie, Ont., have purchased the stock of the Farwell Hardware Company, and will continue the wholesale and retail business in Hardware, Stoves, Tinware, Ship Chandlery and Lumbermen's Supplies. The new concern expect to build a large warehouse in the rear of the store, and will also make a number of improvements in the old premises, with a view to providing a well appointed and up to date place of business.

Among the Hardware Trade.

Bare, Gillette & Rulison have succeeded Bare & Gillette, dealers in Stoves and Bicycles, Charlotte, Mich., and have added a line of general Hardware.

The partnership heretofore existing between H. F. Hertzog and E. S. Heilman under the firm name of Hertzog & Heilman, Reading, Pa., was dissolved on the 19th ult. The business will be continued at the old stand by H. F. Hertzog.

P. E. Nichols has succeeded Albert Peterson, New Windsor, Ill., dealer in Hardware, Stoves, Agricultural Implements, Sporting Goods, &c.

Geo. R. Rosenberg, White Cloud, Mich., has purchased the business of A. Q. Adams and will continue at the old stand. Mr. Rosenberg has rearranged his stock, having equipped his store with Heller's Steel Boxes and made a number of other improvements.

J. F. Sadler has succeeded Sadler, Coleman & Co., Farm Implement and Vehicle merchants, Bonham, Tex.

W. B. Barstow & Co., Manila, Iowa, have been succeeded by Barstow, Sykes & Brown, who will continue at the old stand, handling Hardware, Stoves, Agricultural Implements, Sporting Goods, &c.

F. J. Bahr has succeeded N. S. Miller, Eagle, Neb., dealers in Hardware, Stoves, &c.

F. R. Bachelor has purchased the business of the Munden Hardware Company, Munden, Kan.

C. S. Burt has purchased a half interest in the Hardware and Agricultural Implement business of E. S. Wiggins, Woodward, O. T., and the style has become Wiggins & Burt.

C. M. Dougham has disposed of his retail Hardware, Stove and Farm Implement business in Altamont, Kan.

O. P. Spillman, Etna, Ill., whose Hardware store was burned out some time since, has again resumed business.

Hatch-Arland-Kellie Company, Mt. Vernon, S. D., have purchased the Hardware, Stove, Agricultural Implement, Buggy and Harness stock of Colby & Diehl of that place. They have built an addition to the establishment, 30 x 72 feet.

Granum Bros., Thief River Falls, Minn., dealers in Hardware, have been succeeded by Oen & Granum.

McDaniel & Harrell are successors to O. R. McDaniel in the Hardware, Stove, Wagon, Buggy and Farm Implement business, at Prescott, Ark.

W. G. Stolts has purchased the business formerly conducted by the Burns Hardware Company, Green Bay, Wis.

J. B. Phillips & Co. have succeeded W. E. Maxey, Mattoon, Ill., in the Hardware, Stove and Sporting Goods business.

W. M. Tyler has disposed of his stock of Hardware and Agricultural Implements, at Arrow Rock, Mo., to W. W. Hains, who will continue at the old stand.

H. H. Onstad succeeded January 1 to the business formerly conducted by Onstad & Co., Dawson, Minn., dealers in Hardware, Stoves, Tinware, &c.

Jenkins & Hill, Sisseton, S. D., have sold out their Hardware, Stove and Farm Implement business to Carlberg Bros. & Norby.

O. P. Maxon, Searsboro, Iowa, has sold his stock of Hardware, Tinware, Stoves, &c., to Robert Rivers. Mr. Maxon will continue in the Buggy and Wagon business.

E. S. Berger has succeeded Wentworth & Co., Smith Center, Kan., dealers in Hardware, Stoves, &c.

C. A. Miller is successor to McIntyre & Dalrymple, Seaton, Ill., Hardware and Farm Implement merchants.

Gilbert & Phelps, in the Hardware business at New Castle, Ind., have sold out to W. D. Pierce & Son.

The Hardware establishment of James S. Neill, Fredericton, N. B., was recently robbed of $50 worth of goods.

E. S. Grimes is successor to E. S. Grimes & Son, Davis City, Iowa, dealers in Harness, Agricultural Implements, Buggies and Wagons.

E. J. Swartz & Son have moved their Hardware business from Milford to Wakarusa, Ind.

Nahum Perry & Co., Attleboro, Mass., have just opened a branch store in North Attleboro.

G. L. Pierson & Co. have purchased the Hardware business of James A. Robb, at Sutherland, Neb.

Franzen Bros. have lately opened up in business, at Riverside, Cal., carrying a line embracing Shelf Hardware, Stoves and Tinware, Sporting Goods, &c.

Mills & Cowles, Olympia, Wash., have purchased the Hardware business, at Chehalis, Wash., formerly conducted by C. W. Johnston & Co., and will continue it as a branch store.

Goin & Helverine have purchased the Hardware store of Bell Bros., Beattie, Kan.

William E. Sweet and A. H. Reed have entered into partnership, at Westmoreland, Kan., under the style of A. H. Reed & Co. The firm will carry a stock, including Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

J. H. and W. R. Potter have sold a two-thirds interest in the Potter & Nottress Hardware Company, Storm Lake, Iowa, to J. H. Egy and Joseph Nottress, and the style of the firm has become Nottress & Egy.

Haines & Bryner have succeeded T. J. Haines in the Hardware, Stove, Tinware and Sporting Goods business in Urbana, Iowa.

Tyler & Bennett have succeeded E. S. Willyoung in the Hardware and Plumbing business, at Albion, N. Y. The new firm have made a number of improvements in the store, giving it an attractive and up to date appearance.

G. B. Sanborn, dealer in Hardware, Paints, Glass, Doors, Windows, &c., Ballard, Wash., has lately completed an addition, 50 x 20 feet, to his establishment. Mr. Sanborn's business is both wholesale and retail.

Miscellaneous Note.

The Peerless Iceland Freezer.

An improvement for this season to which Dana & Co., Cincinnati, Ohio, manufacturers of the Peerless-Iceland freezers, call attention is the method of securing or holding the tub top in place while in operation. This is done by means of a key let into a key plate, which is in turn backed by a back plate, the whole fastened to the freezer tub on the inside surface by means of two small wood screws. The upper edge of the key plate being eccentric in form, the head of key being turned or revolved, gives a draw motion, securely locking the complete tub top when in position. Another improvement noted is the placing of the waste opening near the upper edge of tub instead of at the bottom or center, as is usually the case.

New Mystic Lawn Sprinkler.

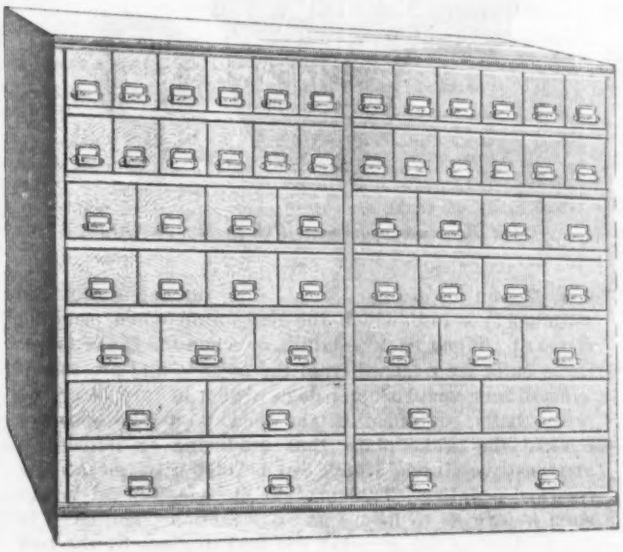
F. E. Kohler & Co., Canton, Ohio, are introducing the lawn sprinkler herewith illustrated. It is constructed without revolving parts, and is so arranged as to throw

New Mystic Lawn Sprinkler.

either a full circle or a side spray by changing the position of the thumb piece. Plain sprinklers are also made by the firm in three patterns.

Heller's Mice Proof Seed Case.

The W. C. Heller & Co., Monclair, N. J., have added to their line of seed cases the one shown in the accompanying cut. It contains 54 interchangeable steel drawers 12 inches in length. The interchangeable system permits, it is remarked, of arranging seeds alphabetically, using the smaller drawers for small seeds



Heller s Mice Proof Seed Case.

and the larger drawers for bulky seeds. The drawers have lap fronts to prevent the entrance of insects, and a capacity, according to size, of 5½, 7½, 9 and 14 quarts. The drawers have pulls and card clip. The case is provided with a steel back, and measures 62 inches in width, 53 inches in hight and 13 inches deep; weighing, when packed, about 400 pounds. Case No. 1901 is made of white wood, stained to desired color; case No. 1902 is of solid oak, in natural or antique finish.

The Keystone Vises.

The Hollands Mfg. Company, Erie, Pa., are offering a line of vises, one of which is here shown. A feature of the vises is the U-shaped bar, on which a design patent has been applied for. The vises are referred to as strong, and are made both stationary and swivel base, for the use of mechanics, coach makers and filers; also malleable pipe vises. The manufacturers state that the vises are of a high grade and offered at a medium price,

The Keystone Mechanics' Vise.

the cost having been reduced by leaving off finish not required.

Automatic Self Chalking Line.

Smith & Hemenway Company, 296 Broadway, New York, have just put on the market an improved form of self chalking line, as here illustrated. The new fea-

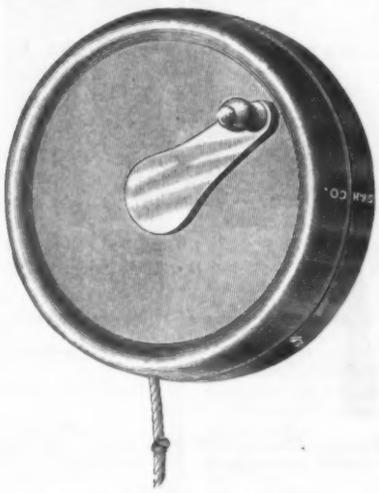


Fig. 1.—Self Chalking Line.

ture of this construction is an interior spring by means of which an even tension is maintained, thus keeping the line properly guided so that it will run freely and not kink. The simple mechanism is contained in a metallic case, into which powdered chalk is introduced whenever necessary, so that the line when pulled out is always automatically chalked. One portion of chalk will last a

Fig. 2.—Sectional View of Self Chalking Line.

long time, even in frequent use. A fresh supply of chalk can be quickly placed in the case by the removal of an oval head screw on the reverse side of Fig. 1, which permits the two parts of the case to be separated. Three sizes are made, with lines 25, 50 and 100 feet long, the former having a case 3 x 1 inches in dimensions, the others being proportionately larger.

The Reynolds Tire Bolting Machine.

The illustrations herewith given show the Reynolds tire bolting machine, manufactured by the Marion Machine & Tool Company, Marion, Ind. The machine is a combination bolt clipper, bolt wrench and tire bolt holder. It will successfully remove burrs, run them on or clip

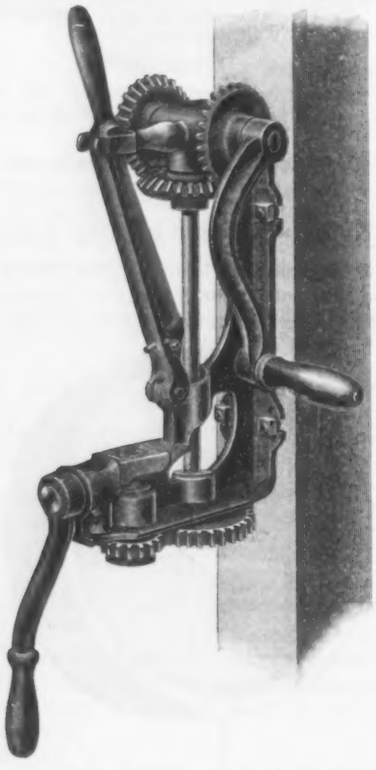


Fig. 1.—The Reynolds Tire Bolting Machine.

off the ends of tire bolts, and it will fit any sized tap. Either operation, it is stated, can be performed on any ordinary buggy wheel in less than two minutes with perfect ease to the operator. The manufacturers claim that it is the only machine of its kind on the market.

Fig. 1 is an illustration of the machine. Fig. 2 shows

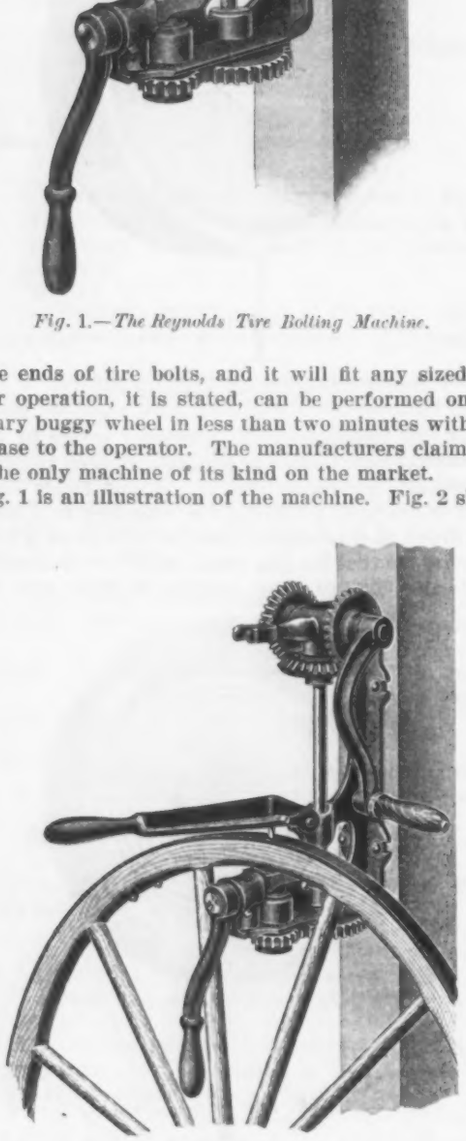
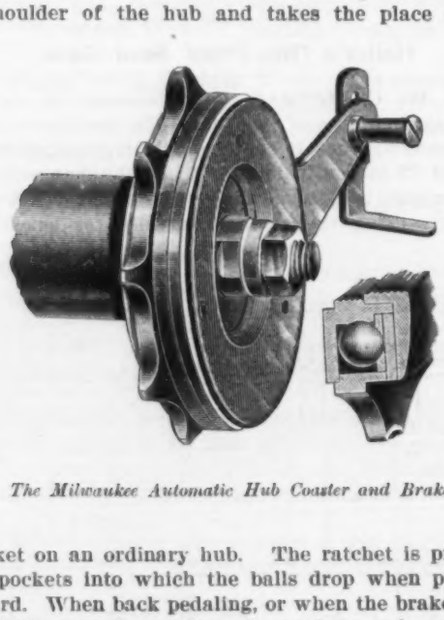


Fig. 2.—The Reynolds Machine with Wheel in Position.

the machine in operation on a wheel and arranged for taking off and putting on the taps. At the top of the machine a small reversing finger is placed which reverses the chuck, so that the handle always turns from the operator. When the finger is lifted from one side of the machine and placed in the slot on the other side it throws the opposite bevel gear in place, thus enabling the machine to be reversed in an instant. When the taps are all on, the bolt cutter is in front of the chuck. The bolt cutter clips the bolt off very easily when the lever is pulled. The bolt holder is a lever which when not in operation is held up out of the way by a small spring, but is easily brought in contact with the bolt when required. The socket wrench removes burrs easily from old work, even if sunk deeply in the wood. The cutter is a simple rotary device at the outer end of the machine, in close touch with the wrench. The machine is furnished with three sizes of wrenches or hollow chucks—viz., ⅛, 3-16 and ¼ inch—which are quickly changed.

The Milwaukee Automatic Hub Coaster and Brake.

The Milwaukee Automatic Machine Company, Milwaukee and Michigan streets, Milwaukee, Wis., have just placed on the market the automatic coaster and brake which is herewith illustrated. The brake can be fitted to all standard makes of hubs. It consists of five main parts—namely, ratchet, sprocket, brake plate, lock nut and ball retainer. The ratchet screws up close against the shoulder of the hub and takes the place of the



The Milwaukee Automatic Hub Coaster and Brake.

sprocket on an ordinary hub. The ratchet is provided with pockets into which the balls drop when pedaling forward. When back pedaling, or when the brake is set, these balls are released from the pockets and are forced against four small sliding dogs, which in turn force the brake balls contained in the pockets in the sprocket against the brake plate, thus producing an immediate and positive clutch, which can be instantly released by forward pedaling. The sprocket fits over the ratchet in such a way as to insure an easy motion. The balls in the pockets of the sprocket are held in place by the ball retainer, which serves the purpose of having all balls act simultaneously. The brake plate fits over the sprocket and ball retainer and is provided with a dust cap. The lock nut screws on the thread of the regular lock and holds all in position. The brake plate is attached to the bicycle frame by an adjustable clamp. All parts are drop forgings, with the exception of the brake plate and ball retainer. The brake plate is made of tool steel and is tempered. The device is referred to as light, yet strong and simple, and as not detracting from the appearance of the bicycle. The manufacturers state that it is both a free coaster and powerful brake.

Perry & Hendricks, Midlothian, Texas, have disposed of their stock of Hardware to J. E. Cooper and H. T. Holland of that place. Messrs. Perry and Hendricks are intending to embark in business again under the style of the Midlothian Mercantile Company. For this purpose they are putting up a substantial brick building. Their line will include Shelf Hardware, Farm Implements, Vehicles, Sporting Goods, Furniture, &c.

Current Hardware Prices.

REVISED JANUARY 15, 1900.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00...33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ lb 7¼@7¾c
Hay-Budden, Wrought.....8@9¼c
Horseshoe brand, Wrought.....9¼@9¾c
Samson.....₩ lb 7½@8c
Trenton, Wrought.....₩ lb 8¼@8¾c

Imported—

Armitage's Mouse Hole.....8¾@9¼c
Peter Wright's.....9¼@9¾c

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....30%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull & Hoyt Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.. .....70@70&5%
Boring Machine Augers.....60&10&10@70&5%
Car Bits, 12-in. twist.....60@..%
Jennings' Pattern:
Auger Bits.....60@..%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 90. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65&5@70%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.00@2.75
German Pattern.....gro. $3.25@5.00
Double Cut, makers' lists.....50&5@50&10%

Hollow Augers—

Ames.....25&10%
Bonney's Adjustable, ₩ doz.....$15.55
New Patent.....25&10%
Universal.....20%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered..gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands..$6.25@6.50
First Quality, other brands $6.00@6.25
Jobbers' Special Brands:
Good Quality.....$5.00@5.50
Best Quality.....$6.25
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—Iron or Steel.

Concord, Loose Collar.....4½c
Concord, Solid Collar.....5 c
No. 1 Common.....3@3¼c
No. 1¼ Com. New Style...3¼@4 c
No. 2. Solid Collar.....3¾@4 c
Nos. 7, 8, 11 to 14 ....75&10%
Nos. 15 to 18..... .....60&10%
Nos. 19 to 23.....75@75&10%

2% cash 10 days.

Boxes, Axle—

Common and Concord, not turned.. 5c
Common and Concord, turned..lb. 6c
Half Patent.....lb. 9c

Balances—Sash—Spring—

Spring Balances .....50@50&10%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%
Pelouze.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 5@3¾c

Beams, Scale—

Scale Beams, List Jan. 12, '82.30&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover.₩ gro $8 00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$10.00
Taplin Mfg. Co.:₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size, tinned.....$9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned.....$17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List..70@70&10%
C. E. Jennings & Co.. Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5%

Blacksmiths—

Inch..	*2*	*2½*	*3*	*3½*	*4*	*5*	*6*
Each..	*$3.70*	*3.95*	*4.55*	*5.10*	*5.70*	*6.55*	
Extra Length:							
Each..	*$4.25*	*4.85*	*5.40*	*5.95*	*6.80*	*7.95*	

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.75*	*6.75*

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50&10%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....20&10&10%

Hand—

Hand Bells, Polished.....60@60&10%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss 60%
Silver Chime.....33⅓@33⅓&10%

Miscellaneous—

Farm Bells..... ...lb. 2@2½c
Steel Alloy Church and School..... 50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Common Standard.....75@75&10%
Standard.....70@70&10%
Extra..... .60&10&5%
High Grade..... 0&10@70&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap 60&10@60&10&5%
Standard .....60&10&10@70&5%
Light Standard.....70@70&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand..... ... . 70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chains.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70@70&10%
Cleveland Steel.....50&10@60&10%
Ford's Star Brand Self Lubricating.. 60&10%
Hollow Steel, Ford's Pat. Star Brand... 50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50%
See also *Machines, Hoisting.*

Boards, Stove—

Zinc, Crystal, &c.... .....50&10%

Bolts—Carriage, Machine &c.—

Common, list Jan. 30, '95..70&10&2½@..%
Norway Iron, $3.00, list Oct. 7, '85.. 75@75&10%
Phila. Eagle, $3.00 list May 24, '99.... 80@80&10%
Bolt Ends, list Jan. 30, '95..... 70&10&2½@..%
Machine, list Oct. 1, '99.70&10&2½@..%

NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.53*	*.56*	*.45*	*.57*	*.80*

Cast Iron Spring Foot:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.85*	*1.20*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.60*	*.90*	*1.15*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz....	*$0.44*	*.50*	*.61*	*.70*	*1.28*

Wrought Barrel .....70c&10@75&5%
Wrought " Bronzed..50c&5@50c&10%
Wrought Flush, B. K..50c&10@60c&10%
Wrought Shutter...40c&10c&10@60c&5%
Wrought Square Neck.....60@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow..... .....60c&10@..%
Stove.....67½%

Tire—

Common..... .....70@70c&5%
American Screw Company:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....77½%
Bay State, list Dec. 28, '99.....70%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84....75%
Eagle Phila., list Oct. 16, '84.....77½%
Eclipse, list Dec. 28, '99.....70%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....70%
Keystone Phila. list Oct. '84.....77½%
Norway Phila., list Oct. '84.....75%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1⅜*	*1½*	*2*
Per doz..	*$3.50*	*4.50*	*5.00*	*6 50*
Inch		*2¼*		*2½*
Per Doz.....		*$7 50*		*10.25*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25@30%

Boring Machines—*See Machines, Boring.*

Boxes Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American..$1.15@1 25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
P., S. & W. Co., Peck's Patent 50&10@60%

Brackets—

Wrought Steel.....70c&10@75c&5%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75&10%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....70@70&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.35c&10@35c&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50c&10%
Fast Joint, Narrow.....50@50c&10%
NOTE.—*Jobbers often sell the following at 70&5%:*
Loose Joint.....70@70c&5%
Loose Pin.....70@70c&5%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70c&5%

Wrought Steel—

Loose Joint..... ..
Table and Back Flaps..
Narrow and Broad.....
Inside Blind..... 75@75c&5%
Loose Pin.....
Loose Pin, Ball and.... Steeple Tip

Bronzed Wrt. Nar. and Inside Blind Butts.....50c&10@50&10c&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 3¾@4c
Sharp, 1 prong.....per lb. 4¼@4½c
Perkins' Blunt.....₩ lb 5 ¢
Perkins' Sharp.....₩ lb 5½¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...		2.40	2.60	each.
Buffalo Pattern.		2.80	3.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro.

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M 32@34c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L. Caps (Sturtevant Shells) $1.00.....5%
All other primers.....$1.10@$1.12

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
B. B. Caps, Con., Ball Swgd.....$1.90
B. B. Caps, Round Ball...$1.12@1 18
Blank Cartridges:
32 C. F., $5.50.....10@5%
38 C. F., $7 00.....10@5%
22 cal. Rim, $1.50.....10@5%
32 cal. Rim, $2.75.....10@5%
Central Fire.....25%
Pistol and Rifle.....15@5%
Primed Shells and Bullets.....15@5%
Rim Fire Sporting.....50%
Rim Fire, Military.....15@5%

Casters—
Bed.....70@70@10%
Plate.....75@75@5%
Philadelphia.....75@75@10%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Martin's Patent (Phœnix).....45%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....30%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Full Casks:

3-16	¼	5-16	⅜	7-16	½	9-16
7.25	5.35	4.35	3.50	3.35	3.25	3.15
⅝	¾	⅞ to 1¼ inch.				
3.10	3.05	3.00 cents per lb.				

Less than Cask lots add 10c per 100 lbs.
German Coil, list July 24, '97..60&10@10%
German Halter Chain, list July 24, '97.....60&10@10%
Traces, Western Standard: 100 pair
6¼—6-3, Straight, with ring...$36.00
6½—6-2, Straight, with ring..$37.00
6½—8-2, Straight, with ring..$31.00
6½—10-2, Straight, with ring..$35.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains, list April, '98.....50@10@60%
Jack Chain, list July 10, '93:
Iron.....60@60@10%
Brass.....60@60@10%
Safety Chain.....70@70@10%
Gal. Pump Chain.....lb 4½@4¾c
Covert Sad. Works:
Breast, Hitching and Rein Chains..50%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community:
Eureka Coil and Halter.....60@40&5%
Niagara Coil and Halter.....60@60&5%
Niagara Cow Ties.....45&5@45&10&5%
Am. Coil and Halters.....50@10&5@60%
Am. Cow Ties.....35&5@40&5%
Wire Goods Co.:
Dog Chain.....60%
Universal Dbl-Jointed Chain.....45%

Chalk—(From Jobbers.)
Carpenters', Blue.....gro. 45c
Carpenters', Red.....gro. 40c
Carpenters', White.....gro. 35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....25@25&10%

Chisels—
Socket Framing and Firmer
Standard List.....70@10@...%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....50&5%
L. & I. J. White.....30@30&5%

Tanged—
Tanged Firmers.....40@5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181....25%
L. & I. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality.....lb. 12c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—
Beach Pat., each $8.00.....20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard..30%
Drill Chucks, New Model.....2%
Independent Lathe Chucks.....40%
Improved Planer Chucks.....20%
Universal Lathe Chucks.....40%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill.....30%
Geared Scroll.....30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's.....50&10%
Besty, Parallel.....33⅓&10%
Lineman's, Ucica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Walk—
Star Socket, All Steel.....⅌ doz. $4.00 net
Star Shank, All Steel.....⅌ doz. $3.75 net
W. & C. Saank, All steel, 7½ in. ⅌ d oz., $3.35; 8 in., $3.40; 8½ in., $3.50.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40&10%
Fayette R. Plumb.....33⅓&33⅓&10%
P., S & W.....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company:
Handy Toilet.....⅌ doz. $7.80
Mascotte Toilet.....⅌ doz. $8.40
Monitor Toilet.....⅌ doz. $9.00
Stewart's Patent.....⅌ doz. $10.00

Clips, Axle—
Eagle and Superior ¼ and 5-16 inch.....70@10%
Norway, ¼ and 5-16 inch..70@70@10%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Racking, &c.).....70@70@10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather Pope & Stevens' list.....40%

Compasses Dividers, &c.
Ordinary Goods.....70@10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Conductor Pipe, Galvanized—
Factory Shipments to Jobbers:

Territory.	Carload. Loose.	L. C. L. Nested.
Eastern....	75&10%	75&5%
Central....	75&7½%	75&2½%
Southern..	75&5%	75%
S. Western.	75%	70&10&2½%

Terms, 2% for cash.
See also *Eave Trough and Elbows*

Coolers, Water—

Nos.	2	3	4	6
Labrador 8 gal.	$11.50	$14.00	$17.50	$20.00
$24.00				
Nos	3	4	6	8
Iceland.. 10	$23.00	$25.00	$30.00	$37.50
14 gal.	$57.00	$72.00		

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Drab.....lb. 25c
Braided, White, Common, lb 17½@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....lb 9 @9¼c
Cotton Sash Cord, Twisted....12@16c
Patent Russia.....lb. 12½@13c
Cable Laid Russia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp.....lb. 10@12c
Patent India.....lb. 10@12c
Pearl Braided, cotton.....⅌ lb 17@18¢
Massachusetts, White.....⅌ lb 22½¢
Massachusetts, Drab.....⅌ lb 26½¢
Eddystone Braided Cotton.....⅌ lb 19¢
Harmony Cable Laid Italian.....⅌ lb 18¢
Ossawan Mills:
Crown, Solid Braided White...⅌ lb 18¢
Braided, Giant, White.....⅌ lb 17¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson:
Braided, Drab Cotton.....⅌ lb 32½¢
Braided, Italian Hemp.....⅌ lb 32½¢
Braided, Linen.....⅌ lb 40¢
Braided, White Cotton, Spot.⅌ lb 28½¢
Silver Lake:
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢.....15%
Linen, 57½¢.....15%

Wire, Picture—
Braided or Twisted,
See *Trade Report.*

Corn Knives and Cutters
—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant.....⅌ gr. $24.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross 5½@6c
Cases, 100 gro., $5.00, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy.....⅌ doz. $7.00
Fort Madison, Light.....⅌ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....⅌ doz. $10.00

Cutters—Glass—
Smith & Hemingway Co.....30%

Meat—
Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz.. $10,80 13 20 18 00
American.....30%

Nos	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut:

No	0	1	8	10	13
Each	$1.75	2.25	3.00	3.00	3.50

Enterprise.....25@25&7½%

Nos	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ⅌ doz.....33⅓&10%

Nos	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ⅌ doz. $22.75.....50&10%
Little Giant, ⅌ doz.....33⅓@33⅓&5%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$71.00	$68.00

Sterling.....33⅓&5%

Nos	1	2
Each	$3.00	$2.50

Miles' Challenge, ⅌ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumpn No. 605, ⅌ doz. $24.00.....33⅓&5%
Woodruff's, ⅌ doz.....40%

Nos	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ⅌ doz. $60.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ⅌ gr....$18@$30
Slaw Cutters, 2 Knife, ⅌ gr....$22@$36

Tobacco—
All Iron, Cheap.....doz. $4.25@$4.50
Enterprise.....25@30%
National, ⅌ doz. $21.00.....40%
Sargent's, ⅌ doz. $24.00.....45&10%

Washer—
Appleton's, ⅌ doz. $16.00.....50&10&10%
Bonney's.....⅌ doz. $4.75

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz. $10.00
Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger.....⅌ doz. $9.00
Kohler's Universal.....⅌ doz. $14.00
Kohler's Little Giant.....⅌ doz. $15.00
Kohler's Hercules.....⅌ doz. $12.00
Kohler's Invincible.....⅌ doz. $10 00
Kohler's Rival.....⅌ doz. $9.00
Kohler's Pioneer.....⅌ doz. $9.00
Never-Break Post Hole Diggers, ⅌ doz. $24.00.....60%
Samson, ⅌ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ⅌ doz. $18; No. 2, $15 No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00..15&10%
Breast, P., S. & W.....30@30&10%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....16&5%
Johnson's Drill Points.....25&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W....40&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Standard List.....60@5@65@5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Balsey's Screw Holder and Driver, ⅌ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....27½%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'die Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....50&10&10%
Nos. 20 and 40.....60%&10%
Screw Driver Bits.....⅌ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....30&10&10%

Eave Trough, Galvanized
Factory Shipments to Jobbers.

Territory.	Carload.	L. C. L.
Eastern.....	80&10&5%	80&10%
Central.....	80&10&2½%	80&7½%
Southern.....	80&10%	80&5%
S. Western...	80&2½%	80%

Terms, 2% for cash.
See also *Conductor Pipe.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments to jobbers.....60@10@5%

Emery, Turkish—

	4 to 46	54 to 150	Flour
Kegs.....lb.	*4½c*	*5 c*	*5 c*
¼ Kegs....lb.	*4¼c*	*5¼c*	*5 c*
¼ Kegs....lb.	*5 c*	*5¼c*	*5¼c*
10-lb cans, 10 in case.....	*6 c*	*6¼c*	*¼c*
10-lb.cans, less than 10....	*10 c*	*10 c*	*8 c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's.....50&10%

Faucets—
Cork Lined.....70@5@70@10@5%
Metallic Key, Leather Lined.....70@70@10%
Red Cedar.....50@50@5%
B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar.....40%
Star.....60@60&5%
Star, Metal Plug, new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ⅞ inch.....35%
Self Measuring:
Enterprise, ⅌ doz. $36.00.....40%
Lane's, ⅌ doz. $36.00.....40&10%
National Measuring, ⅌ doz. $66.00...40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75@5%
Good Brands.....75&10@75&10@10%
Fair Brands.....80@80@10%
Second Quality.....80@10@80@25%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....2%

Fixtures, Grindstone—
Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz..	*$2.90*	*3.10*	*3.30*	*3.80*	*4.60*

Stowell's Giant Grindstone Hanger.....⅌ doz. $6.00
Stowell's Grindstone Fixtures.....50%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30@20&10%
Sargent's.....60&10&10%

Fluting Machines—
See *Machines, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 18 to 20 inches.....70@6%
Hay, 2 tine.....65%
Hay, 3 tine.....66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine.....70%
Manure, 5 and 6 tine.....70%
Spading.....70@5%
Iowa Dig-Esy Potato.....65%
Victor, Hay.....66⅔%
Victor, Manure.....70%
Victor, Header.....60&20%
Champion, Hay.....66⅔%
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure.....70%
Columbia, Spading.....70%
Hawkeye Wood Barley 4 tine ⅌ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&20&7½%
Acme Manure.....60&25%
Dakota Header.....70&10&2½%
Jackson Steel Barley.....70&10&2½%
Kansas Header.....65&20%
W. & C. Favorite Wood Parley 4 tine, ⅌ doz., $5.00; 5 tine, $6.00
Plated.—See *Spoons.*

Frames—
Saw—
Red, Polished and Varnished..doz. $1.15@$1.20
White.....doz. 75@80¢

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—
Qts... 2 3 4 6 8 10
Best. $1.40 1.60 1.85 2.50 3.00 3.50
Good $1 25 1.35 1.70 2.05 2.65 3.10
Fair. $1.00 1.10 1.30 1.75 2.30 2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse.....$2.60
Cotton Fuse.....2.90
Single Taped Fuse.....3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00
10@5%

Gates, Molasses and Oil—
Stebbins'.....30&10@30&10&10%

Gauges—
Marking, Mortise, &c.....55&10@55&10@10%
Barrett's Comb. Roller Gauge.....⅌ doz. $6.75@7.50
Stanley R. & L. Co.'s Butt & Babbet Gauge.....30&10%
Wire, Brown & Sharpe's.....2%
Wire, Morse's.....2%
Wire P., S. & W. Co.....10&10&5%

Gimlets—

Nail, Metal, Assorted, gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.25
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window

Jobbers' List, Sept. 1, 1900
Small lots from store:
Single Strength, all sizes ...85&25%
Double Strength, all sizes.85&25&5%
10% to be added on all first quality, both Single and Double.

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (½ pts., pts., qts.)..... 35½@48%
List C, Cans (½ gal., gal.) ....25@45%

Glue Pots—See Pots, Glue.

Grease, Axle—

Common Grade.....gro. $5.00@6.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ₱ doz. 1 lb $1.20; 2 lb $2.00
Snow Flake:
1 qt. cans per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00
} 10%

Grindstone Fixtures—

See Fixtures, Grindstone.

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000.....$9.00
Copper ₱ 1000.....$18.00

Gun Powder—See Powder.

Hack Saws—See Saws.

Hafts, Awl—

gro.
Peg Patent, Leather Top..$4.90@5.25
Peg Patent, Plain Top....$3.50@3.75
Sewing, Brass Ferrule. ...$1.50@1.60
Saddlers', Brass Ferrule..$1.35@1.45
Peg, Common.....$1.25@1.35
Brad, Common.....$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web.. ....45&2%
Covert Mfg. Co., Jute Rope.....45&2%
Covert Mfg.Co., Sisal Rope.....30&2%
Covert's Saddlery Works', 96 list, Web.. 60&10%
Covert's Saddlery Works, Leather 60&10%
Covert's Saddlery Works, Jute....60&5%
Covert's Saddlery Works, Sisal.....60%
Covert's Saddlery Works, Manila..60&5%
Covert's saddlery Works, Cotton.....70%

Hammers—

Handled Hammers—

Heller's Machinists'.....50@50&5%
Heller's Farriers.....50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10%
Peck, Stow & Wilcox.....40&40&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....40@40&10%
Engineers' and B. S. Hand..... 60&7½@60&10&7½%
Machinists' Hammers..... 60&7½@60&10&7½%
Riveting and Tinners'.....50@50&10%
Sargent's C. S. New List.....45&10%

Heavy Hammers and Sledges—

3 lb. and under...lb. 45c
3 to 5 lb .....lb. 36c } 80&10@80
Over 5 lb.....lb. 30c } &10&5%
Wilkinson's Smiths'.....9½c@10c lb.

Handcuffs and Leg Irons

See Police Goods.

Handles—

Agricultural Tool Handles—

Hoe Rake, Fork, &c.....60@60&10%
Shovel, &c., Wood D Handle.50@50&5%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. $2 40@$2 60
Auger, large.....gro. $2 85@$3.00
Brad Awl.....gro. $1.25@$1 50
Chisel Handles:
Apple Tanged Firmer, gro ass'd. $2.25@$2 35; large, $2.50@$2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; large. $3 50@$3.70.
Apple Socket Firmer, gro. ass'd, $1.70@$1.85; large. $2 00@$2 25
Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large. $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd. $2.50@$2.75; large. $2.65@$2.85
File, assorted.....gro. $1.60@$1.15
Hammer, Hatchet, Axe, &c.....60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished.. .....50@60c
Plane Handles:
Jack, doz. 30@25c; Jack Bolted.. 55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3	4	5	6	8
Doz.....$0.85	1.30	1.60	1.95	2.45

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch.....	3	4	5	6
Doz.....$1.45	1.90	2.55	3.10

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Cronk Hanger Co.:
Loose Axle..... .....60%
Roller Bearing.....60&10%
Lane Bros.:
Parlor, Standard.....$3.25
Parlor, New Model.....$2.75
Barn Door, Standard.....60&10%
Covered.....50&10&10&5%
Special.....60&10%
Lawrence Bros.:
Advance.....60%
Cleveland.....60&10%
Crown.....60%
New York.....60%
Peerless.....60&10%
Sterling.....60%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Stowell Mfg. and Foundry Co.:
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50%
Elevator.....40%
Interstate.....50&10%
Magic.....50%
Matchless.....60%
Nassau.....60&10%
Parlor Door.....50%
Railroad.....50&10%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500....40&15%
Zenith for Wood Track.....50&10%
Taylor & Boggis Foundry Co.:
Kidder's.....50&50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track .....60&10%
L.T. Roller Bearing.....60&10&5%
New Era Roller Bearing.....50&10%
O. K. Roller Bearing.....60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing.....60&10%
Tandem Nos. 1 and 2. .....60%
Underwriters' Roller Bearing ...40%
Wilcox Auditorium Ball Bearing.20%
Wilcox Barn Trolley No. 123.....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50&10&10%
Wilcox Trolley Ball Bearing....40%

Extra 5@10% often given.

Harness Menders—See Menders.

Harness Snaps—See Snaps.

Hasps—

McKinney's Perfect Hasp ₱ doz 10&10%
Wrought Hasps, Staples, &c.—See Wrought Goods.

Hatchets—

Best Brands.....40&10@50%
Cheaper Brands....50&10@50&10&5%
Note.—Net prices often made.

Hay and Straw Knives—See Knives.

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1838 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.....	1	3	5
Doz pair.....$0.75	1 45	2 90

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.....	1	1½	2	2½
Doz. pair....$0.60	.55	.52	.45

Mortise Reversible Shutter, (Buffalo, &c.)

No.....	1	1½	2
Doz. pair....$0.65	.60	.55

Parker.....70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 .....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5.....66⅔&10%
Sargent's, Nos. 11 & 13.....70&10%
Wrightsville H'dware Co.:
O. S., Lull & Porter..... .....80&2½%
Acme, Lull & Porter.....75&10%
Queen City Reversible. .....75&10%
Stenger's Positive Locking, Nos. 1 & 3 ....70&10&5%
Shepard's Noise ess, Nos 60, 65, 55... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5..... .....75&7½%
1868, Old Pat'n. Nos 1, 3 & 5.....75&7½%
Tip Pat'n, Nos. 1, 3 & 5 .....75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5..... .....75&7½%
Shepard's Double Locking, Nos. 20 & 25 ....70&10%
Champion Gravity Locking, No. 75..... 75&7½%
Steamboat Gravity Locking, No. 10..... 5&7½%
Pioneer, Nos. 000, 45 & 5½.....75&7½%
Empire, Nos. 101 & 103 .....70&7½%
W. H. Co.'s Mortise Gravity Locking, No 2 ....60&10%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.30.....30&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.....	1	2	3
Hinges with Latches.	$1.90	2.50	3.25
Hinges only.....	1.30	1.90	2.90
Latches only.....	0.65	0.65	0.95

New England:
With Latch.....doz. ....@$1.55
Without Latch ....doz. ....@$1.25
Reversible Self-Closing:
With Latch.....doz. ....@$1.80
Without Latch.....doz. ....@$1.45
Western:
With Latch.....doz. $1.40@1.75
Without Latch.....doz. $0.95@1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, Nos. 1 & 2..65&2½%
Shepard's or Clark's, No. 3.....55&5%

Spring Hinges—

Holdback, Cast Iron.gro. $8.00@8.25
Non-Holdback, Cast Iron..... gro. $6.75@7.25
J. Bardsley
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....33⅓%
Chicago Spring Butt Co.:
Chicago.....20%
Floor Hinge.....40%
Garden City Engine House.. 20%
Keene's Saloon Door.....20%
Triple End.....40%
Lawson Mfg. Co.:
Marchi ss.....30%
Matchless Pivot.....35%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr..... $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme, Cast Steel.....30%
Acme, Brass.....20%
American.....30%
Columbia, No. 14.....₱ gr. $9.00
Columbia, No. 18.....₱ gr. $25.00
Columbia, Adjustable.....30%
Gem, new list.....25%
Clover Leaf.....₱ gr. $12.50
Oxford new list.....25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:

	Extra
Light Strap Hinges..66⅔%	25&10@
Heavy Strap Hinges..70%	25&10&
Light T Hinges....50&10%	5%
Heavy T Hinges...60&10%	
Extra Heavy T Hinges..66⅔%	
Hinge Hasps 45	
Cor. Heavy Strap 70%	
Cor. Ex. Heavy T.....66⅔%	

Screw Hook and Strap. { 6 to 12 in...lb. 2¼@3 c; 14 to 20 in..lb. 2¼@2¾c; 22 to 36 in..lb. 2¼@2½c

Screw Hook and Eye:

¾ to 1 inch.....	lb. 5¾@6 c
⅝-inch.....	lb. 6¼@7 c
½-inch.....	lb. 8¾@9 c

Hods, Coal—

	15	16	17	18 inch.
Galv. Open..	$2 05	2.20	2.45	2 65 ₱ doz.
Jap. Open...	$1.55	1.70	1.85	2.05 ₱ doz.
Galv. Funnel.	$2.75	2.90	3.10	3 45 ₱ doz.
Jap. Funnel.	$2.00	2 15	2.35	2.70 ₱ doz.

Hoes—Eye—

Scovil and Oval Pattern..... 60&5@60&10&5%
Grub, list Feb. 23, 1899....65@65&10%
D. & H. Scovil 35%

Handled—

Sept. 1, 1900, List:
Field and Garden.....75&2%
Ladies', Boys', Toy and Onion... 70&10&10%
Street and Mortar .....75&7½&2%
Cotton.....70&10&10&5&2%
Planters'.....70&30%
Weeding.....75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz .....75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. $4.50
Junior Size .....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. $4.80
Ft. Madison Dixie Tobacco Hoe..75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe.....60%
W. & C. Ivanhoe.....75&2%
B. B. Cultivator Hoe.....75&10%
Acme Weeding.....75&10%
W. & C. Lightning Shuffle Hoe, ₱ doz. $5.50

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow Ware—See Ware, Hollow.

Holders—

Bit—
Angular, ₱ doz. $24.00..... 45&10%

File and Tool—
C. E Jennings & Co.'s Mod l Tool Holders.....33⅓%
Nicholson File Holders and File Handles..... .....33⅓%

Hooks—

Cast Iron—
Bird Cage, Reading..... .....50&10@60%
Bird Cage, Sargent's List... .....50&10@60%
Clothes Line, Sargent's List.50&16⅔&10%
Ceiling, Sargent's List..... .....40&10%
Clothes Line, Stowell's..... .....70%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading..... .....70&75%
Coat and Hat, Sargent's List.....45&10%
Coat and Hat, Wrightsville ....65&10%
Harness, Reading List.....70&10@75%

Wire—
Belt..... .....80%
Atlas, Coat and Hat:
Single Cases..... .....45%
10 Case Lots..... .....45&10%
Czar Harness..... .....50&10&5%
Wire Coat and Hat:
Acme.....50&10&5%
B. B. .....50&10&5%
V Brace, Chief and Czar.....50&10&5%
Gem.....60%
Bright Wire Goods—See Wire.

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton..... doz. $1.05@1.15
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	1	2	3	4
Best.....	$1.50	1.75	2.00	
Common ..	$1.40	1.40	1.50	1.75

Potato and Manure 70%
Whiffletrees.....lb. 4¼c
Hooks and Eyes:
Brass.....60&10&10@70%
Malleable Iron .....70&5&10&10&10%
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60&10%
Crown Picture.....50&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse

Horseshoes—See Shoes, Horse.

Hose Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 4¼@ 4¾c
3-ply Standard .....ft. 5 @ 6 c
4-ply Standard.....ft. 8 @ 9 c
3-ply extra .....ft. 9 @10 c
4-ply extra .....ft 11 @12 c
Cotton Garden, ¾-in., coupled:
Low Grade .....ft. 6 @7 c
Fair quality.....ft. 8 @9 c

Irons—

Sad—

From 4 to 10..... .....lb 3@3½c
B. B. Sad Irons..... .....lb. 3½@4c
Chinese Laundry..... .....lb. 5@5½c
Chinese Sad..... .....lb. 3½@3½c
Mrs. Potts', per set:

Nos. 55	60	65
72c	69c	82c	79c

New England Pressing, lb.. 3½@3½c

Soldering—

Soldering Coppers, 1 & 1¼ lb., 21@ 22c.; 2 lb., 19@ 21c
Covert Mfg. Co. .... 20&2%

Pinking—

Pinking Irons.....doz. 50@60c

Jack Screws—See Screws.

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy.....70%
Lockport.....40@40&10%
Victor.....60%
Lane's Steel.....40%

Kettles—

Brass, Spun, Plain..... ..20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knife Sharpeners—See Sharpeners, Knife.

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives..... .. ....40%
Foster Bros.' Butcher, &c..... .....30%
Hay and Straw—See Hay Knives.

Corn—

Ft. Madison Cut-Easy, ₱ doz.....$3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Ad). Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&5@70&10%
Adjustable Handle.....25@&5%
Bradley's..... .....35%
C. E. Jennings & Co. Nos. 45, 46.. 40&10%
Jennings & Griffin..... .....66⅔&5%
Swan's..... .....70&10&2½%
Watrous..... .....30&10@40%
L. & I. J. White..... .....20&5&2&5%
Cantelo's Folding..... .....50@50&5%

Hay and Straw—

Iwan's Sickle Edge.....₱ doz. $11.50
Lightning.....$7.50
Maine.....₱ doz. $8.50

Mincing—

Buffalo.....₱ gro. $15.00

Miscellaneous—

Farriers'.....doz. $2 00@3 00
Wos.enholm's.....₱ doz. $3.00@3 25

Knobs—

Base, 2½-inch, Birch, or Maple. Rubber tip, gro .. ..$1.25@1.40
Carriage, Jap, all sizes..gro. 30@33c
Door, Mineral.....doz. 60@65c
Door, Por. Jap'd .....doz, 70@75c
Door, Por. Nickel....doz. $2 00@2.10
Bardsley's Wood Door, Shutter, &c ..15%
Picture, Sargent's.....60&10%
Snow's Victor .....50&10%

Ladders, Step—

Handy Ladder Works:

Length Feet.	Extended Length. Feet.	Shipped Ready for Use	Shipped K. D., Per doz.
4.....	7.....	$16.00.....	$14.00
5.....	9.....	19.50.....	17.00
6.....	11.....	24 50.....	21.00
7.....	13.....	29.50.....	25.00
8.....	15	34.00.....	29.00
9.....	17..	39.00.....	32.00
10.....	19.....	43.00.....	35 00
11	21.....	46.50.....	40.00
12.....	23	51.60.....	45.00

Ladies— Melting—

L. & G. Mf. Co. 60%
P., S. & W. ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns— Tubular—

Regular Tubular ..... *doz. $4.50@5.50*
Side Lift Tubular ..... *doz. $4.75@5.25*
Square Lift Tubular ..... *doz. $4.75@5.25*
Other Styles ..... *40@10@40@10@5%*

Bull's Eye Police—

No. 1, 2¾ inch *$3.60*
No. 2, 3 inch *$4.00*

Latches, Thumb—

Roggin's Latches ..... *doz. 32@33c*

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ..... *doz. 45c; large, 55c*
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼ ..... ₩ 100 $11.00
Other sizes, Iron ..... 70&10%
Other sizes, Brass and Bronze 70%
R. & E. 45%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	*$2.20*	*2.00*	*1.65*
75 feet	*$1.80*	*1.70*	*1.30*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 ..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50
₩ gr. 30%

Locks—

Cabinet—

Cabinet Locks ..... *33⅓@33⅓&7½%*

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 50%
Sargent & Co. ..... 40@40&10%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron, list Dec. 3, '97 ..... *75&10%*
R. & E. Mfg. Co. Wrt Steel and Brass. 50%

Sash, &c.—

Fitch's Bronze and Brass ..... 60&5%
Fitch's Iron 70%
Ives' Patent ..... 55&5@65%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 200 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 30%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American, ₩ doz. $28.00
Western Star, No. 2, ₩ doz. 28.00
Western Star, No. 3, ₩ doz. 30.00
St. Louis, No. 41, ₩ doz. 60.00
Carload lots 10% off. Trade 10% allowed.

Mallets—

Hickory ..... *45&5@50&5%*
Lignumvitæ ..... *45&5@50&5%*
Tinners', Hickory and Applewood, doz. ..... *50@55c*

Mats—

Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills— Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

Cheap ..... *all sizes, $2.00@2.10*
Good ..... *all sizes, $2.50@2.75*

	10	12	14	16-inch
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Pennsylvania and Continental. 60&10&5%
Quaker City ..... 70&5%
Great American ..... 70&5%
Philadelphia:
Sty'es M., S. C., K., T. ..... 70&5%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ..... 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... *85@85&10%*
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	28¢	26¢	25¢	24¢	23¢	50&10%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	25¢	23¢	21¢	21¢	40%
Champi'n	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinto	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	23¢	21¢	21¢	50%
Neponset	23¢	21¢	20¢	19¢	18¢	40%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%
American, Nos. 10 to 16						9@9½¢

Picture

	1½	2	2½	3	3½ in.
Brass Head	*.55*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head	*1.10*	*1.10*	*1.10*		*gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.
Cold Punched Mfrs. or U. S. Standard. Off list.
Hexagon, plain ..... *5.80@5.90c*
Square, plain ..... *5.40@5.50c*
Square, C. T. & R. ..... *5.60@5.70c*
Hexagon, C. T. & R. ..... *6.40@6.50c*
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd. Square Blank or Tapped ..... *5.80@5.90c*
Hexagon Blank or Tap'd ..... *6.50@6.60c*

Oakum—

Best or Government ..... *lb. 6¼c*
Navy ..... *lb. 5 c*
U. S. Navy *5¼c*
Plumbers' Spun Navy *5¼c*
In carload lots ¼c lb. off f. o. b. New York.

Oil, Axle—

Snow Flake:
1 pt. cans, per doz. $3.00
1 qt. cans, per doz. $4.80
1 gal. cans, per doz. $15 00
5 gal. cans, per doz. $66.00
} 33½&10%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *40&10@50%*
Tin or Steel ..... *60&10@65%*
Zinc ..... *60&10@65%*

Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co.:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc. ..... 60@60&10%

Openers—

Can—

French ..... *doz. 35c*
Iron Handle ..... *doz. 25@27c*
Sprague, Iron Hdle ..... *per doz. 35@40c*
Sardine Scissors ..... *doz. $1.75@$3.00*
Tip Top ..... per doz. $0.75
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... per doz. 40@45c
Waldorf, ₩ gro. $9.00

Egg—

Nickel Plate ..... per doz., $2.00
Silver Plate ..... per doz., $4.00

Packing—

Rubber—

Standard, fair quality ..... *70&10@75%*
Inferior quality ..... *75&10@80%*
Extra ..... *60&5@60&10&5%*
Jenkins' Standard, ₩ lb 80c ..... 35@25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11¼c lb.*
Jute ..... *3½@5c lb.*
Russia Packing ..... *12@13c lb.*

Pails—

Creamery—

S. S. & Co., with gauges. No 1 $6.50; No. 2, $6.75 ₩ doz.

Galvanized—

Price per gro.

Inch	10	12	14
Water, Regular	*18.00*	*$1.00*	*$4.00*
Water, Heavy	*22.00*	*25.00*	*28.00*
Fire, Rd. Bottom	*31.00*	*33.00*	*35.00*
Well	*27.00*	*29.00*	*31.00*

Pans—

Dripping—

Standard List ..... *65&10@65%*

Fry—

Common Lipped:

No.	1	2	3	4	5
Per doz.	*$0.60*	*.75*	*.85*	*.95*	*1.15*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing: Light wt., 20 sq. ft. to lb.	*$0.40@0.45*
Medium wt., 12 sq. ft. to lb	*$0.60@0.65*
Heavy wt., extra quality	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0.80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$40.00*
York Haven Waterproof Sheathing	$1.35@1.75

Tarred Paper.

1 ply (roll 300 sq. ft.), ton *$28 00*
2 ply, roll 100 sq. ft. ..... *50@55c*
3 ply, roll 100 sq. ft. ..... *75@80c*

Sand and Emery—

List Dec. 23, 1899 ..... *50&10@50&10&10%*
see *Trade Report.*

Parers—

Apple—

Advance ..... ₩ doz. $4.50
Baldwin ..... ₩ doz. $5.00
Bonanza ..... each $5.00
Dandy ..... each $7.50
Eureka, 1898 ..... each $16.00
Family Bay State ..... ₩ doz. $12.00
Hudson's Little Star ..... ₩ doz. $4.00
Hudson's Rocking Table ..... ₩ doz. $5.50
Improved Bay State ₩ doz. $27.00@30.00
New Lightning ..... ₩ doz. $5.50
Reading 72 ..... ₩ doz. $4.00
Reading 78 ..... ₩ doz. $7.00
Turn Table '98 ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.00

Potato—

Saratoga ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.50

Paris Green— *per lb.*

In Arsenic, kegs or casks *12½c*
In kegs, 100 to 175 lbs ..... *13 c*
In kits, 14, 28, 56 lbs ..... *14 c*
In paper boxes, 2 to 5 lbs ..... *14 c*
In paper boxes, 1 lb *14½c*
In paper boxes, ½ lb *15½c*
In paper boxes, ¼ lb *16½c*

Picks and Mattocks—

List Feb. 23, 1899 ..... *75@75&10%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... *60&10%*
Iron, list Nov. 11, '85 ..... *60&10%*

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in. ..... *70@70&5%*
Extra Heavy, 2-6 in. ..... *75@75&5%*
Fittings ..... *75&10&5@80%*

NOTE.—*Freight allowances on Carload lots.*

Pipe, Merchant, Boiler Tubes, &c.—

Carloads to Consumers.

Merchant Pipe.

	Black.	Galvanized.
⅛ to ½ inch	*61%*	*45%*
¾ to 10 inch	*68¼%*	*56%*

Boiler Tubes.

Steel.	Up to 22 feet.	23 feet and over.
1 to 1½ inch and 2½ in.	*49¼%*	*44½%*
1¾ to 2¼ inch	*45%*	*39½%*
2¾ to 13 inch	*57%*	*52½%*
Iron.		
1 to 1½ inch and 2½ in.	*49¼%*	*44½%*
1¾ to 2¼ inch	*45%*	*39½%*
2¾ to 13 inch	*57%*	*52½%*

Casing, Cut Lengths. S. & S.

2 to 3 inch	*58%*
3½ to 4 inch	*63%*
4½ to 12½ inch	*65%*

NOTE.—*The old list is still used by some jobbers, and net prices are often quoted.*

Planes and Plane Irons—

Wood Planes—

Molding ..... *40@2½@40&5%*
Bench, First quality ..... *45&10@45&10&5%*
Bench, Second quality ..... *50&10@50&10&5%*
Bailey's (Stanley R. & L. Co) 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 35&10@35&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... *35@35&5%*
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to 2
Stanley R. & L. Co. ..... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₩ doz. $9.00

Plates—

Felloe ..... *lb. 3¾@4c*
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $3.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... *65&10@70&10%*
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45.

Gas Pipe	*7*	*8*	*10*	*12-in.*
	$1.75	*$2.00*	*$2.75*	*$3.75*

Acme Nippers ..... 40@40&5%
Bernard's:
Parallel Pliers, &c 95%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
Cronk's 60%
Improved Button ..... 70&5%
Stub's 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers and Tools 50@50&5%
Morrill's Parallel, ₩ doz. $12.00 ..... 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... *70&10@75&5%*
Davis Iron, Machinist Nos. 1 to 14 ..... 20%
Davis Iron, Adjustable Nos. 6 to 49 ..... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10%
Stanley R. & L. Co. ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers ..... *lb. 9½@10 c*
½-lb. papers ..... *lb. 10 @10½c*
¼-lb. papers ..... *lb. 10½@11 c*

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.25
Ft. Madison, Western ..... ₩ doz. $3.75

Police Goods—

Manufacturers' Lists ..... *25@25&5%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.75 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ℔ boxes, ₩ doz. $1.25; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz. $1.50

Stove—

Black Eagle Benzine Paste, 5 ℔ cans ..... ₩ lb 10¢
Black Eagle, Liquid, ½ pt. cans ..... ₩ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ lb 8¢
Fireside ..... ₩ gr. $3.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Peerless Iron Enamel, ½ pt. cans ..... ₩ doz. $1.50
Wynn's Black Silk, 5 ℔ pail ..... each 70¢
Wynn's Black Silk, ½ ℔ box, ₩ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₩ doz. $0.75
Wynn's Black Silk, ½ pt. liq., ₩ doz. $2.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro. $7.00@$7.50*
1½ qt ..... *gro. 9 50@ 10 00*
2 qt ..... *gro. 10.50@ 11.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... *40&10@50%*
Tinned ..... *40@45%*

Powder—

In Canisters:
Duck, 1 lb. each *45c*
Fine Sporting, 1 lb. each *75c*
Rifle, ½-lb. each *15c*
Rifle, 1-lb. each *25c*
In Kegs:
Duck, 6¼-lb. kegs *$2.25*
Duck, 12½-lb. kegs *$4.25*
Duck, 25-lb kegs *$8.00*
Rifle, 6¼-lb. kegs *$1.85*
Rifle, 12½-lbkegs *$3.25*
Rifle, 25-lb. kegs *$6.00*
King's Smokeless Shot Gun and Rifle: Keg (25 ℔ bulk) $22 00
Half Keg (12½ ℔ bulk) $11.25
Quarter Keg (6¼ ℔ bulk) $5.75
Canister (1 ℔ bulk) $1.00
} 25@25&10@25&20%
King's Semi-Smokeless: Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $2.75
One Pound Can, bulk $0.50
} 20@20&10@20&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $18.00 ..... 50%
Crown Prince, ₩ doz. $15.00 ..... 50%
Cyclops ..... 40@40&10%
Diamond B, No. 2, doz. $22.; No. 3, $11 ..... 40%
Eureka, ₩ doz., $16.00; 3 ℔ $15. ..... 40%
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15. ..... 40%
Miller's Falls, No. 3, per doz. $12.00 ..... 15&10%
Pelican ₩ doz. $9.00 ..... 40&10%
Scranton, No. 1 and 2, ₩ doz. $9.00
Scranton, No. 3, ₩ doz. $8.50

Pulleys—

Hay Fork, Swivel or Solid Eye..... doz. $1.50@1.75
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... 40%
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction ... 60&10%
Stowell's Electric Light.....60%
Stowell's Side, Anti-Friction.....60&10%

Sash Pulleys—

Acme.....1¼ in., 16¢; 2 in., 19¢
Common Sense, 1¼ in.... ₩ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 8 and 7, 2¼ in..... ₩ doz. 25¢
No. 9, 1¼ in..... ₩ doz. 20¢
Extra for Plated Finish...₩ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₩ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 18.....1¼ in. ₩ doz., 20¢
Niagara.....1¼ in., 16¢; 2 in., 19¢
No. 26, Troy...1¼ in., 14½¢; 2 in., 16½¢
Star.....1¼ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout..... 75&5@75&10%
Pump Leathers, all sizes.....*gro. $6.00*
Barnes Dbl. Acting (low list).. 55%
Flint & Walling's Fast Mail...55@55&10%
Flint & Walling's Pitcher Spout.....75&5%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good...doz. 65@70c
Spring, good quality.....$1.65@1.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Niagara Hollow Punches.....45%
Niagara Solid Punches..... 55%
Steel Screw, B & K. Mfg. Co..... .40%
Tinners' Hollow, P., S. & W. Co..... 35@35&5%
Tinners' Solid, P., S. & W.Co., ₩ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door, Light...In. ½ ⅝ ¾
100 feet..... *$2.00 $2.50 $3.00*
B. D., for N. E. Hangers:
Small. Med. Large.
100 feet.....*$2 20 2.70 3.20*
Sliding Door, Bronzed Wr't Iron, ft. 6½¢
Sliding Door, Iron Painted...2½@3c
Sliding Door, Wrought Brass, 1¼ in.... *lb. 86c..50%*
Cronk's Double Braced Steel Rail, ₩ foot..... 3½¢
Cronk's O. N. T. Rail..... 3½¢
Lanes' O. N. T., ₩ 100 ft., 1 inch... $2.90
Lanes' Standard, ₩ 100 ft..... 3.75
Lawrence Bros.' ..... ₩ ft. 4¼¢
McKinney's None Better..... ₩ ft. 3¢
McKinney's Standard..... ₩ ft. 3¼¢
Moore's Wr't. Bracket, Steel..... 3½¢
Stowell's Steel Rail, Plain ..... 3½¢

Rakes—

Sept. 1, 1900, List:
Cast Steel.....70¢5&2%
Malleable.....70¢10@75¢5%
Lawn Rakes, Metal Head, per doz., 20 teeth, $3.25; 24 teeth $3 50.
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 29 and 30 teeth..... ₩ doz. $4.50
Kohler's Lawn Queen, 24-tooth, ₩ doz. $4.00
Kohler's Paragon, 24-tooth, ₩ doz. $3.00
Kohler's Steel Garden, 14-tooth, ₩ doz. $3.50
Kohler's Malleable Garden, 14-tooth, ₩ doz.....$2.50

Rasps, Horse—

Disston's.....75%
Heller Bros.....60&10&10%
McCaffrey File Co. Horse Rasps..... 60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Fox Razors, No. 42...₩ doz. $20.00
Fox Razors, No 44...₩ doz $24.00
Fox Razors, No. 82, Platina, ₩ doz $24.00
} dis. 40%
Sterling Razor Works..... ....50%

Razor Strops—

See *Strops, Razor.*

Reels—Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5000N and PN.....40&10%
Shakespeare, Style C..... ....25%

Registers—

Black Jap.....50¢10@60%
White Jap..... 40%
Bronzed..... 40%
Nickel Plated..... 50%
Electro Plated..... 40%
} *Extra 10% often given.*

Riddles, Grain or Sand—

16 in. per doz.....*$2.00@$2.25*
17 in. per doz.....*$2.25@$2.50*
18 in. per doz.....*$2.50@$2.75*

Rings and Ringers—

Bull Rings—

	2	2½	Inch.
Steel.....	$0 75	0.83	*0.88 doz.*
Copper.....	1.10	1.50	*1.50 doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@5 00
Hill's Ringers, G. I...... .....*doz. 75c*
Blair's Rings.....₩ gr. $5.75@6.00
Blair's Ringers..... ₩ doz. $0.90@1.00
Brown's Rings..... ₩ gro. $6.00@6.25
Brown's Ringers..... ₩ doz. $1.00@1.10
Perfect Rings..... ₩ gro. $9.00@9.50
Perfect Ringers, ₩ doz..... $1.25@1.35
Rapid Rings..... ₩ gro. $6.00
Rapid Ringers..... ₩ doz. $0.50

Rivets and Burrs—

Copper.....*50@50&5%*
Iron or Steel:
Tinners' .....*70&10@75%*
Miscellaneous ....*70&10@75%*

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction 50%
Barn Door, Sargent's list..... 50&10&10%
Cronk's Stay..... ..... 60&5%
Cronk's Brinkerhoff..... 60%
Lane's, Stay 33⅓%
Stowell's Barn Door Stay...₩ doz. $1.25

Rope—

Manila, 7-16 in. and larger. lb. 9¼@10 c
Manila.....*¾-inch* lb. 10¼@10½c
Manila, ¼ and 5-16 in. lb. 10¼@11 c
Manila, Tarred Rope, 15 thread.....lb 9¾@10 c
*Manila Hay Rope Med'm.*lb 9¾@10 c
*Sisal, 7-16 in. and larger,*lb. 6¾@ 7 c
Sisal..... .....*¾-inch*, lb. 7¼@ 7½c
Sisal.....*¼ and 5-16 in.* lb. 7¾@ 8 c
Sisal, Hay Rope, 2 to 10 ply.....lb. 7 @ 7½c
Sisal, Tarred, Medium Lath Yarn..... .....lb. 6½@ 6¾c
Cotton Rope:
Best, ¼-in. and larger...lb... @14 c
Med'm, ¼-in. and larger lb... @11½c
Com., ¼-in. and larger.lb... @ 9 c
Jute Rope, No. 1, ¼ in. and up .....lb... @ 6½c
Jute Rope, No. 2, ¼ in. and up..... .....*lb* .. @ 6 c

Wire Rope—

Galvanized .....*25¢10¢2%*
Plain..... .....*50¢10¢2%*

Ropes, Hammock

Covert Mfg. Co.....45&2%
Covert Saddlery Works..... .....60%

Rules—

Boxwood...75¢10¢10¢10¢10¢10@75¢10 ¢10¢10¢10¢5%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ... .50&10%
Stanley R. & L. Co.:
Boxwood...75&10&10@75&10&10&10%
Ivory..... .....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins' Circular..... ..... 50@50&10%
Atkins' Band .....50&10@60%
Atkins' Cross Cuts ..... 35&5%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw..... .....40%
Atkins' Wood Saws 40%
Atkins' Hand, Compass, &c..... ....40%
Disston's Circular Solid and Inserted Tooth.....50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾..... .....70%
Disston Crosscuts..... .....45@45&10%
Disston Narrow Crosscuts....50@50&10%
Disston Mulay, Mill and Drag..... 50%
Disston Framed Woodsaws..35@35&7½%
Disston Woodsaw Blades....40@40&7½%
Disston Woodsaw Rods..... .....25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 78, 77, 6.....25@25&7½%
Disston Hand Saws, Nos 7, 07, 107, 3, 1, 0, 00, Combination... 30@30&7½%
Disston Compass Keynole, &c25@25&7½%
Disston Butcher Saws and Blades..... 35@35&7½%

C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace Circular and Mill..... .....50%
Peace Cross Cuts, list Jan. 1, '99.....50%
Peace Hand, Panel and Rip.....30%
Richardson's Circular and Mill 50%
Richardson's X Cuts, list Jan. 1, '99..50%
Richardson's Hand, &c..... .....30%
Shaonds' Circular Saws..... .....50%
Simonds' Crescent Ground Cross Cut Saws..... .....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%

Hack Saws—

Disston Concave Blades.....25%
Disston Keystone..... .....30%
Disston Hack Saw Frames.....80%
C. E. Jennings & Co's:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames ... .45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15..... .....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's..... ...*50@50&10%*
Hatch, Counter:
Platform, 4 lb. by ¼ oz...doz. $5.75
Two Platforms, 3 lb. by ½ oz..... *doz. $16.00*
Union Platform, Plain.....*$1.75@2.00*
Union Platform, Striped...*$1.85@2.15*
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice-, &c.....50%
"The Standard" Portables 45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box, 1 Handle .....*doz $2.25@2.75*
Box, 2 Handle..... *doz. $3.75@4.00*
Ship, No. 1, doz. $3.50; No 2, $2 25@2.50
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%

Screens, Window and Frames—

Bonanza Window Screens....60@60&5%
Fiver Pattern Window Screen.60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Extension Window Screens.. 50&10%
Wabash Spring Adj. Screen. 50%

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron...doz. 1 in., $3.00@3.25; 1¼, $5.50@5.75; 1¼, $4.00@4.50
Bench, Wood, Beech...doz. $3.50@3.75
Hand, Wood.....*50¢10@40%*
Hand, R. Bliss Mfg. Co..... .....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... .....*80@...%*
Coach and Lag, Gimlet Point, list Oct. 1, '99.....*75¢15@...%*
Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40&5@40&10%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50¢10%
Flat or Round Head, Brass..... *50@50¢10%*

Set and Cap—

Set (Iron or Steel) .....*70¢10%*
Sq. Hd. Cap..... .....*65¢10%*
Hex. Hd. Cap..... .....*65¢10%*

Wood—

List Jan. 1, 1900.

Flat Head, Iron.....*85c*	
Round Head, Iron.....*80c*	
Flat Head, Brass.....*82½c*	
Round Head, Brass.....*77½c*	
Flat Head, Bronze.....*75c*	*Extra 10&5*
Round Head, Bronze....*72½c*	
Drive Screws.....	

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:
Natural Finish, per doz. $7.50@7 75
Pol. Blade.....*per doz. $8.00@8.15*
Painted or Bronzed...per doz. $8.00
Weed and Bush...per doz. $7.25@7.50

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise..... .....35@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools..... *doz. $2.50@2.60*
Aiken's Sets, Awl and Tools:
No. 20, ₩ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... .....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... .....30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₩ doz.....$3.00

Nail—

Square.....*per gro. $2.50*
Round, Blk. and Pol., assorted..... *gro. $1.80@2.50*
Octagon.....*gro. $4.25@4.75*
Knurled, Good.....*gro. $5.00@5.50*
Buck Brothers..... .....27½%
Cannon's Diamond Point, ₩ gr. $12...25%
Snell's Corrugated, Cup Pt..... .....50%
Snell's Knurled, Cup Pt..... .....66⅔%

Rivet—

Regular list..... .....*70@70¢10¢5%*

Saw—

Aiken's Genuine..... ₩ doz. $5.50@6.00
Aiken's Imitation ..... ₩ doz. $3.00@3.10
Atkin's Criterion..... ..... 40%
Atkin's Adjustable..... ..... 40%
Bemis & Call Co.'s Cross Cut..... .....30%
Bemis & Call Co.'s Plate..... .....20%
Bemis & Call Spring Hammer..... .....40%
Disston's Star and Monarch.....25%
Hammer, Bemis & Call Co.'s new Pat.45%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₩ doz. $18..... .....60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co..... 60@65%
Tanite Mills ₩ gross, $14.40....25@33⅓%

Sharpeners, Skate—

Eureka Skate Sharpener.....₩ doz. $3.00

Shaves Spoke—

Iron.....*doz. $1 00@1 25*
Wood.....*doz. $1.75@2.25*
Bailey's (Stanley R. & L. Co).....50&10%
Goodell's, ₩ doz. $9.00..... .....15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13 00*	*15.00*	*17 00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap..60¢10¢10@70¢5%
" Nickel.....*60@60¢5%*
Fair qual. Jap.....*75¢10@80%*
" Nickel.....*70¢10¢7.5%*
Tailors' Shears.....*40@40¢10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40@40&5%
Wilkinson's Hedge..... .....50%
Wilkinson's Sheep..... .....1900 list, 50%

Tinners' Snips—

Forged Handles, Steel Blades..40¢10% Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin.. 40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch..... .....50%
Niagara Snips..... .....40%

Pruning Shears and Tools—

Cronk's Pruning Shears..... .....33⅓%
Disston's Combined Pruning Hook and Saw, ₩ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₩ doz. $12.00 25@25&10%
John T. Henry Mfg. Company's Pruning Shears all grades.....50&5%
Orange Shears..... .....50&10%
Grape..... .....50&10%
Tree Pruners..... .....75%
Nagley's Pruning Shears...₩ doz. $8.00
P., S. & W. Co..... .....33⅓@33⅓&10%

Sheaves—Sliding Door—

Stowell's Anti-Friction..... .....50%
Patent Roller Hatfield's, Sargent's list. 80&10@80&10&7%
Reading..... ..... 70&10@75%
R. & E. list..... .....33⅓%
Wrightsville, Hatfield Pattern.....80%

Sliding Shutter—

Reading list..... .....70&10@75%
R. & E. list..... .....33⅓%
Sargent's list..... .....50&10⅓&10%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge. 33⅓&10%
Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge..... .....15%
Climax Club, League, Rival, 14, 16 and 20 gauge ($7.50 list).....20&5%
Climax Club, League, Rival, 10 and 12 gauge..... .....25&5%
Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge..... .....15%
Trap and Metal Lined, 10, 12, 16 and 20 gauge..... .....33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder..... *40¢5%*
Loaded with Nitro Powder..... *40¢10¢10¢5%*

Shoes, Horse, Mule, &c.—

Factory Shipments.

Carloads, f. o. b., Pittsburg.....*$3 50*
Less than Carloads, f. o. b., Pittsburg.....*$3.55*
Steel Shoes, 25c. per keg less
Burden's, all sizes, ₩ keg..... ..$3.60

Shot—

Drop, up to B, 25-lb. bag...$1.20@1.40.
Drop, up to B, 5-lb. bag ..... .35
Buck, 25-lb. bag.....*$1.55@1.65*
Buck, 5-lb. bag ..... .40
Chilled, 25 lb. bag..... ...*$1.60@1.68*
Dust Shot, 25 lb. bag.....*$2.00@2.10*
Dust Shot, 5-lb bag..... ... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2, 2d Grade*
Plain Back....	*$10 50*	*$9 60*
Strap Back....	*9.90*	*9.00*
Cleveland Pat'n	*10.80*	*9.90*
	C3, 3d Grade.	*D4, 4th Grade*
Plain Back....	*$8.70*	*$8.10*
Strap Back....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 30c doz.
Black deduct 30c doz.

Note.—The above are the regular Association prices to small retailers, but are often shaded by jobbers $0 50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $6.75@7.50.

Shovels and Tongs—

Brass Head .....60&5@60&10
Iron Head .....60&5@60&10%

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@12.00

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

Eclipse.....₱ gr. $10.00
Electric Light.....₱ gr. $12.00
Hunter's Genuine.....₱ gr. $12.50
Shaker (Barler's Pat.) Flour Sifters, ₱ doz., $2.00.....30%

Sieves, Tin Rim—

Per dozen			
Inch	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1.08	1.10	1.20
Black, scant	$0.78	.80	.83	

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz......$0.75@0 80
Mesh 20, Nested, doz.......85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Standard list .....60@60&10%

NOTE.—*There is not entire uniformity in lists used by jobbers.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted 45%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg. Co., Enameled.....50%

Skeins, Wagon—

Cast Iron.....70&10@75&
Malleable Iron.....40&10@50&
Steel .....40@40&10%

Slates—

"D" Slates.....40@40&10%
Unexcelled Noiseless Slates.....60&10&10@50&10&10&10%
Wire Bound.....35@40&10%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling $2.00.....33⅓%

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:
Derby.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Yankee.....35&2%
Yankee, Roller.....30&2%
Covert's Saddlery Works:
Banner.....60&10%
Crown.....60&10%
Model.....60&10%
Triumph.....60&10%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....45%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....65&10@65&10&10%
Sargent's Patent Guarded.....60%&10%

Snaths—

Scythe.....45&5%

Snips, Tinners'—See *Shears*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke*

Spoons and Forks—

Silver Plated—

Flat Ware.....50&10@60&10%

Miscellaneous—

German Silver .....60&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10@1.25
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

Factory Shipments.

	1¼ in and wider	...Blk.	Hf Brt.	Brt.
		4¼	4½	4¾c lb

Cliff's Bolster Springs.....3%
Cliff's Seat Springs.....₱ pair 55¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.....} *List Jan. 5, 1900*
Steel and Iron.....} .....7@75%
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels......40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....60&10%
Winterbottom's Try and Miter.....50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5 50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap.....*doz. $3.00@3.75*
Good Grade.....*doz. $3.00@3.50*
Tinned Iron.....*doz. $0.75@1.25*
Iron, Porcelain Lined doz. $2.00@3.25
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind .....*lb. 8¼@8¼c*
Electricians', Association list.....70&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples.....*per lb*..4@4¼c
Grand Crossing Tack Co.'s list.....80&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths' .....40@40&10%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $10.80 per gro., 12 inch, $12.00
Cleveland Stone Co., list Nov., '92..33⅓%
Pike Mfg. Co., list '95-'96.....33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
Corundum Oil, Double Grit.....50%
Corundum Axe Stones, Slips, etc.....55%
Pike Mfg. Co.:
Hindostan No. 1, ₱ lb...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 8 in.....80¢ } 33⅓@ 33⅓&10%
Turkey Slips.....$1.50
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 8 to 5 in. $2.80
Arkansas Stone, No. 1, 5 to 3 in. $3.50
(33⅓%)
India Oil Stones.....25%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....35&3%
Wilcox, Steel, per doz., $3.00.....50%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers, Pump—

Diamond Joe Pump Strainers..per doz. 75¢

Straps, Box—

Cary's Universal case lots.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points...*doz. 55@65c*
Socket.....*doz. $1.75*

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks Brads, &c.—

List Jan. 15, '99.
Carpet Tacks, American...90¢10@..%
American Cut Tacks.....90¢30@..%
Swedes Iron Tacks.....90¢40@..%
Swedes Upholsterers' Tacks, ... 90¢10@..%
Gimp Tacks.....90¢10@..%
Lace Tacks.....90¢10@..%
Trimmers' Tacks.....90¢30@..%
Looking Glass Tacks.....70¢10@..%
Bill Posters' and Railroad Tack.... 90¢10@..%
Hungarian Nails .....80¢25@..%
Common and Patent Brads.70¢10@..%
Trunk and Clout Nails..80¢10@..%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks.....90¢&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4 00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

Tapes, Measuring—

American Asses' Skin.....40¢10@50%
Patent Leather.....25@30&5%
Steel.....40@40&5%
Chesterman's.....25@25&5%
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Thermometers—

Tin Case.....80@80&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6⅛ in., ₱ 1000..$10.00
Galv. Steel 5-32 x 8⅛ in., ₱ 1000..$11.00
Galv. Steel 5-32 x 11⅛ in. ₱ 000..$12.00
Galv. Steel 5-32 x 15⅛ in. ₱ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....70¢10@75¢10%
Newhouse.....45@50%
Hawley & Norton.....65&5@70%
Victor (Oneida Pattern).....75@75&10%
Star (Blake Pattern).....65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes...8½c
Mouse, Round or Square Wire..... *doz. $0.85@1.00*
Diamond Joe Mouse Traps....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₱ doz. $2.75;..case of 72 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $20.00; Mouse, No. 3, $18.00.....50%

Fly—

Balloon, Globe or Acme..... *doz. $1.15@1.25; gro. $12.00@14.00*
Harper, Champion or Paragon .. *doz. $1.25@1.40; gro. $13.50@15.00*

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels, gro. $7.00
Peace's Plastering 30%
Woodrough & McFarlin, Plast'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $21.00
Model Stove Trucks.....₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Miscellaneous—

	BC	B.
Flax Twine—		
No. 9, ¼ and ½-lb. Balls	*.22c*	*26c*
No. 12, ¼ and ½-lb. Balls	*.18c*	*21c*
No. 18, ¼ and ½-lb. Balls	*.16c*	*19c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*18½c*
No 36, ¼ and ½-lb. Balls	*.15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls.....*22@22½c*
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....7@8c
Cotton Wrapping, 5 Balls to lb ... 10¼c@..
American 2-Ply Hemp, ¼ and ½-lb. Balls .....*12@13c*
American 3 Ply Hemp, 1-lb. Balls.. *12@13c*
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....*9c*
India 3-Ply Hemp, 1-lb. Balls.....*9c*
India 3-Ply Hemp, 1¼-lb. Balls.... *8c*
2, 3, 4 and 5-Ply Jute, ½-lb. Balls... 10@10½c
Mason Line, Linen, ½-lb. Balls...*45c*
No. 2½ Mattress, ¼ and ½-lb. Balls.37c
Wool.....7c

Vises—

Solid Box.....50%
Bonney's Saw Vises.....40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Keystone.....70%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's Clincher.....30@40%
Merrill's.....20%
Miller's Falls.....low list 10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Simpson's Adjustable.....40%
Snedliker's X. L.....20@25%
Stephens'.....20@25%
Van, W. & W. Hdw. Co.....40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .50&10%
Disston's D 8 Clamp and Guide, ₱ doz $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&10%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up	*60c*
B. E., 9 and 10	*70c*
B. E., 8	*80c*
B. E., 7	*80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B. E., 11 and larger	*$1.70@1.75*
Ely's P. E., 12 to 20	*$3 00@3.85*

Dis. 50&5%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....*60c&5@65%*
Unground.....*65c&10@70%*
White Enameled Ware:
Maslin Kettles.....*75c&10@80%*
Boilers and Saucepans.....*50&5@50&10%*
Tinned Boilers and Saucepans..... 50&5@50&10%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 35%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite.....70&10@70&10&10%
Iron Clad:
Lipped Ware, high list.....70%
Mottled Ware, high list.....75%
Never Break Enameled.....50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles .....65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles..... 65@65&10%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles.....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
Red Star, laundry size, stationary protector.....$4.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Wilson, family size, bent frame...$2.75
Single Zinc Surface:
Naiad protector, family size, open back peforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25
Wilson, bent frame family size, ventilated back.....$2.25

Washers—

Leather, Axle—

Solid.....80&10&10@85%
Patent.....85&10@85&20%
Coil: ¾ 1 1¼ 1¼ *Inch.*
11c 12c 13c 15c *per 100*

Iron or Steel—

Size bolt ... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.60 3.20 3.00
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ½ inch, barrel lots, per lb......
1¼@1¾c

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Oil Finish.....℔. 3¼c

Weights, Sash—

Per ton.....$20.00@22.50

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1.65@1.75; 10-in., $2.00@2.10; 12-in., $2.50@2.75; 14-in., $4.25@4.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70&10%
Brt. and Ann., 10 to 18.....72½&5%
Brt. and Ann., 19 to 26.....75&7½%
Brt. and Ann., 27 to 36....75&10&2½%
Cop'd and Galv., 6 to 9.....66⅔&5%
Coo'd and Galv., 10 to 18.....70%
Cop'd and Galv., 19 to 26.....70&10%
Cop'd and Galv., 27 to 36.....72½&5%
Tinned, 6 to 14.....70&10&5%
Tinned, 15 to 18.....70&5&5%
Tinned, 19 to 26.....70%
Tinned, 27 to 36.....65&10%
Annealed Wire on Spools..70&5%70&10%
Brass and Copper Wire on Spools..60&5%60&10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899....
85&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting..30&2½@85%
Painted Screen Cloth per 100 ft.....
$1.00@$1.05
Light Hardware Grade:
2-8 Mesh, Plain (8c. list) sq. ft...
1¾c
2-8 Mesh, Galv. (8c. list) sq ft....
2¼c

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....70&10@75%
Case lots.....75&10%
Baxter's S.....60&10%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Acme.....60&10%
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓&5%
Bull Dog, W. & B.....60&10&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Gem Pocket.....80%
Hercules.....70%
Solid Handles, P. S. & W.....50&10%
Stevenson.....60&10&10%

Wrought Goods—

Staples, Hooks, &c., list March 17 '92.....85&10@85&25%

Yokes, Neck—

Covert Saddlery Works, Trimmed 60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.. list net

Zinc—

Sheet.....℔. 6½c@7c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.... 7¾@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6¼
Lots less than 500 ℔.....@ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price..@ 1¼
Lead White, Dry in bbls.....5¾@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4½@ 4¾
Zinc, Paris, Red Seal, dry.....@ 8¾
Zinc, Paris, Green Seal, dry.....@ 9¼
Zinc, Antwerp Red Seal, dry....@ 6½
Zinc, Antwerp, Green Seal, dry..@ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.

Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....7 @11
Black, Ivory.....15 @21
Lamp, Com.....3 @ 5
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....30 @35
Brown, Spanish.....½@ 1
Brown, Vandyke, Amer.....1¾@ 2½
Brown, Vandyke, Foreign.....2½@ 3½
Carmine, No. 40.....℔ ℔ 2.05@2.75
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....16 @20
Lead, Red, bbls. ⅓ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Litharge, bbls. ⅓ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6½
Ocher, French Washed.....1½@ 2½
Ocher, Dutch Washed.....4½@ 5
Ocher, American.....℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11½
Orange Mineral, French.....11½@11¾
Orange Mineral, German.....8¾@ 9¼
Orange Mineral, American.....7¾@ 8
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3½
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer., ℔ 100 ℔. 80@1.10
Red Venetian, English.℔ ℔ .. 1.80@2.10
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 9½
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 2
Talc, French.....℔ 100 ℔ $1.25 @1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔. 95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @25
Vermilion, Quicksilver, bulk....@87
Vermilion, Quicksilver, bags....@88
Vermilion, English, Import....80 @95
Vermilion, Chinese.....$1.00@1.20

Colors in Oil.

Black, Lampblack.....12 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @38
Blue, Ultramarine.....13 @16
Brown, Vandyke.....9½@13
Green, Chrome.....10 @12
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9½@12
Umber, Burnt.....9½@12

Miscellaneous.

Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.75
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common.℔ 100 ℔ .42@ .52
Whiting, Gilders.....54@ .64
Whiting, extra Gilders'.....58@ .68

Putty.

In bulk.....$1.90
In bladders.....2.40
In cans, 12 ℔ to 25 ℔.....2.50
In cans, 1 ℔ to 5 ℔.....3.00

Spirits Turpentine.

In Southern bbls.....@39½
In machine bbls.....@40

Glue.

Low Grade.....℔ 12 @15½
Cabinet.....13½@16½
Medium White.....14½@16½
Extra White.....18 @23
French.....12 @40
Irish.....13½@16

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....℔ gal. 56@57
Linseed, City, boiled.....58 @59
Linseed, State and West'n, raw 55 @56
Linseed, raw Calcutta seed.....@85
Lard, Prime.....46 @47
Lard, Extra No. 1.....50 @52
Lard, No. 1.....41 @43
Cotton-seed, Crude.....29 @29½
Cotton-seed, Summer Yellow, prime.....31 @31½
Cotton-seed Summer Yellow, off grades.....30 @30½
Sperm, Crude.....@..
Sperm, Natural Spring.....@..
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....56 @57
Sperm, Bleached Winter.....61 @62
Whale, Crude.....@..
Whale, Natural Winter.....@47
Whale, Bleached Winter.....@48
Menhaden, Crude, Sound.....26 @27
Menhaden, Light Strained.....32 @33
Menhaden, Bleached Winter...35 @..
Menhaden, Ex Bleached Winter 38 @39
Tallow, prime.....51 @52
Cocoanut, Ceylon.....5¼@ 6
Cocoanut, Cochin.....6¼@ 6¾
Cod, Domestic.....34 @35
Cod, Newfoundland.....36 @38
Red Elaine.....39 @..
Red Saponified.....℔ ℔ 5 @ 5¼
Olive, Italian, bbls.....57 @61
Neatsfoot, prime.....52 @54
Palm, prime, Lagos.....℔ ℔ 5¾@6

Mineral Oils.

Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@10¼
Black, 29 gravity, 15 cold test. 10¾@11¼
Black, summer.....2¼@ 9¾
Cylinder, light filtered.....14¾@17¾
Cylinder, dark filtered.....11¾@16¾
Paraffine, 903-907 gravity.....12¼@12¾
Paraffine, 903 gravity.....11¾@11¾
Paraffine, 883 gravity.....9¼@10
Paraffine, red, No. 1.....12¾@13¾
In small lots ¼¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

JANUARY 16, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅜ in. round and square ..... } ₩ lb 1.70@1.80¢
1¼ to 4 in. x ⅜ to 1 in..... .....}
Refined Iron:
1 to 1⅜ in. round and square..... } ₩ lb 1.75@1.85¢
1¼ to 4 in. x ⅜ to 1 in..... }
1¼ to 4 in. x ¼ to 5-16..... ₩ lb 1.90@2.00¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.10@2.20¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.00¢
3 to 3½ in. x 5-16 in.	2.00¢
1¼ to 3 in. x ¼ in	2.10¢
1¼ to 2½ in. x 5-16 in and thicker	2.00¢
1 to 1¼ in. x 3-16 in.	2.10¢
1 to 1¼ x ⅛ in.	2.20¢
⅞ x ⅛ in	2 50¢
¾ x ⅛ in	2.55¢
⅝ x ⅛ in	3.20¢
½ x 3-32 in	3.70¢
Tees:	
1 in	2.50¢
1¼ in	2.40¢
1½ in. and larger	2 30¢
Beams	2.25¢
Channels, 3 in. and larger	2.25¢
Bands—1¼ to 6 x 3-16 to No. 8	₩ lb 2.15¢
"Burden's Best" Iron, base price	₩ lb 3.15¢
Burden's "H. B & S. Iron, base price	₩ lb 2.95¢
"Ulster"	₩ lb 3.60¢
Norway Bars	4 @4¼¢
Norway Shapes	4¼@4¾¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.80 to 1.90¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7½¢
Best Cast Steel Machinery, base price in small lots	6 ¢

Soft Steel Sheets—

¼ inch	2¢	No. 14	2.50¢
8-16 inch	2.05¢	No. 16	2.60¢
No. 8	2 20¢	No. 18	2.90¢
No. 10	2.30¢	No. 20	3.30¢
No. 12	2.40¢	No. 22	3.40¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb, 3.05	3.10¢
Nos. 18 to 21	₩ lb, 3.15	3.20¢
Nos. 22 to 24	₩ lb, 3.25	3.30¢
Nos. 25 and 26	₩ lb, 3.25	3.40¢
No. 27	₩ lb, 3.45	3.50¢
No. 28	₩ lb, 3.55	3.60¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 10½¢
Patent Planished ₩ lb A, 10½¢; B, 9½¢, net.

Galvanized.

	B. B.
Nos. 10 to 16	₩ lb, 12¢
Nos. 17 to 21	₩ lb, 13¢
Nos. 22 to 24	₩ lb, 14¢
Nos. 25 to 26	₩ lb, 15¢
No. 27	₩ lb, 16¢
No. 28	₩ lb, 17¢
No. 29	₩ lb, 19¢
No. 30	₩ lb, 21¢

70@70&55% off

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 18 @ 20 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 13 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12 ¢
R. Mushet's "Special"	₩ lb 46 ¢
" " "Special" Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 10 ¢
Hobson's Choice XX Extra Best	₩ lb 35 ¢
Jessop Self Hardening	₩ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₩ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.

	Per lb
Banca, Pigs	28¼@28¾¢
Straits, Pigs	27¾@28¼¢
Straits in Bars	28¾@29¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$6.75
IX, 14 x 20	8.25
Melyn Grade:	
IC, 14 x 20	6.25
IX, 14 x 20	7.75
Allaway Grade:	
IC, 14 x 20	5.50
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$4.85@4.90
IX, 14 x 20	$5.95@6.00
IXX, 14 x 20	$7.20@7.25

American Terne Plates—

IC, 20 x 28	$9.50@10.00
IX, 20 x 28	11.25@12.00

Tin Boiler Plates, American—

IXX, 14 x 26	112 sheets	$12.50
IXX, 14 x 28	112 sheets	13.50
IXX, 14 x 31	112 sheets	15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	17¼@17¾¢
Ansonia grade Casting	17@17¼¢

Sheet and Bolt—

January 19, 1900. Net.
Prices, in cents per pound.
Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 50 lb.	24 oz., to 32 oz., 18¾ to 25 lb.	18 oz. to 24 oz., 14¼ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9½ to 11 lb.	10 oz. and 11 oz., 7¾ to 9½ lb.	8 oz. and 9 oz., 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	30½	30½	30½	30½	31½	29½	23½	26½	29½
30	96	72	30	30	30	30	31	29	23½	26½	29½
30	.....	96	30	30	30	30	31	29	23½	.....	.....
36	72	.....	30	30	30	30	31	29	23½	27½	30½
36	96	72	30	30	30	30	31	29	23½	26½	.....
36	.....	96	30	30	30	30	31	29	23½	.....	.....
42	72	.....	30	30	30	31½	32½	24½	27½	30½	
42	96	72	30	30	30	31½	32½	24½	26½	.....	
42	120	96	30	30	30	31½	32½	24½	.....	.....	
42	.....	120	30	30	30	31½	32½	24½	.....	.....	
48	72	.....	30	30	31½	32½	33½	25½	28½		
48	96	72	30	30	31½	32½	33½	25½	.....		
48	120	96	30	30	31½	32½	33½	25½	.....		
48	.....	120	30	30	31½	32½	33½	25½	.....		
60	72	.....	30	30	31½	32½	33½	26½	31½		
60	96	72	30	30	31½	32½	33½	26½	.....		
60	120	96	30	30	31½	32½	33½	.....	.....		
60	.....	120	30	30	31½	32½	33½	.....	.....		
72	96	.....	30	30	31½	32½	33½				
72	144	96	30	30	31½	32½	33½				
72	.....	144	30	30	31½	32½	33½				
108	120	.....	30	30	31½	32½	33½				
108	.....	120	30	30	31½	32½	33½				
wider than 108	.....	144	30	30	31½	32½	33½				

Bolt Copper, ⅜ inch diameter and over, ₩ lb 20½¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper. 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb ..... 24½¢
12 oz. and up to 14 oz. to square foot, ₩ lb ..... 25½¢
10 oz. and up to 12 oz., ₩ lb ..... 27½¢
Lighter than 10 oz., ₩ lb ..... 30½¢
Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List March 2, 1900.

Nos.	0000 to 8	9 and 10	11 and 12	
	Base	½¢	¾¢ ₩ lb adv.	
Nos.	13	14	15	16
	¼¢	⅝¢	1¢	1¼¢ ₩ lb adv.
Nos.	17	18	19	20
	1¾¢	2¢	2¼¢	2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-0	3- 0	.....	.....	.....	.....	33	31	30	29	28	27	25	24
1	1	.....	.....	37	35	33	31	30	29	28	27	25	24
2	2	.....	.....	37	35	33	31	30	29	28	27	25	24
3	3	.....	41	37	35	33	31	30	29	28	27	25	24
4	4	.....	42	38	36	33	32	31	30	30	28	26	25
5	5	.....	43	39	37	34	33	32	31	30	29	26	25
6	6	.....	44	40	38	35	34	33	32	31	30	27	26
7	7	61	46	42	39	36	35	34	33	32	31	28	27
8	8	62	47	43	40	37	36	35	34	33	32	30	29
9	9	63	48	44	41	38	37	36	35	34	33	31	30
10	10	64	49	44	41	39	38	37	36	35	34	32	31
11	11	65	50	45	42	40	39	38	37	36	35	33	32
12	12	66	51	46	43	41	40	39	38	37	36	35	34
13	13	67	52	47	44	42	41	40	39	38	37	36	35
14	14	68	53	48	45	43	42	41	40	39	38	37	36
15	15	69	54	49	46	44	43	42	41	40	39	38	37
16	16	70	55	50	47	45	44	43	42	41	40	39	38
17	17	71	56	51	48	46	45	44	43	42	41	40	39
18	18	72	57	52	49	47	46	45	44	43	42	41	40
19	19	73	58	53	50	48	47	46	45	44	43	42	41
20	20	74	59	54	51	49	48	47	46	45	44	43	42
21	21	75	60	55	52	50	49	48	47	46	45	44	43
22	22	76	61	56	53	51	50	49	48	47	46	45	44
23	23	77	62	57	54	52	51	50	49	48	47	46	45
24	24	78	63	58	55	53	52	51	50	49	48	47	46
25	25	79	64	59	56	54	53	52	51	50	49	48	47

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
30	24	20	20	21	21	21	21	21	21	21	23	23	25	27	28¢ ₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(To No. 19, inclusive.) Feb. 26 1896
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¼ in. up to 2 in.	$0.35
" " ⅜ "	.36
" " ½ "	.38
" " ⅝ "	.41
" " ¾ "	.48
" " 5-16 " ⅞ "	.60
" " ¼ " 5-16"	.65
" " 3-16 " ¼ "	1.00
" " ¼ " 3-16"	1.50
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 5% 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 9 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.3	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39
Common High Brass Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add 1¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23¼	.27¼	.28¼
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.59
No. 31	.51	.55	.67
No. 32	.55	.59	.75
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Net.
List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅜ to 3 in. diameter, ₩ lb, net..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb.
Western Spelter..... 4.55@4.60¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.
600 lb casks..... 7¢ | Per lb..... 7¾@7¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4½@4¾¢
Bar	5½@5¾¢
Pipe	4¾¢
Tin Lined Pipe	12½¢ ..... 20% off
Block Tin Pipe	40 ¢ ..... 20% off
Sheet Lead	7¢ ..... 20% off

Old Lead in exchange, 4½¢ ₩ lb.

Solder.

½ & ⅜ guaranteed..... 18½@19 ¢
No. 1..... 14¾@17½¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ lb 11
Hallett's	₩ lb 10
U. S	₩ lb 9¾@10¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 15¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots..... ₩ lb 37¢
100-lb lots..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₩ lb 34¢
100-lb lots..... ₩ lb 33¢

Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than	6-in. ₩ lb.	14-in. ₩ lb.	24-in. ₩ lb.
And including	14-in.	24-in.	30-in.
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.61
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ lb 40¢	No. 15	₩ lb 43¢
No. 9 to No. 10	₩ lb 40½¢	No. 17	₩ lb 50¢
No. 11	₩ lb 41 ¢	No. 18	₩ lb 55¢
No 12	₩ lb 41½¢	No. 19	₩ lb 60¢
No. 13	₩ lb 42 ¢	No. 20	₩ lb 65¢
No 14	₩ lb 43½¢	No. 21	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ lb 14¼¢
Light and Tinned Copper	₩ lb 13¾¢
Heavy Brass	₩ lb 9 ¢
Light Brass	₩ lb 7½¢
Lead	₩ lb 4¼¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 3 ¢
No. 1 Pewter	₩ lb 17 ¢
No. 2 Pewter	₩ lb 9½¢
Tin Plate Scrap	₩ ton $6.50
Wrought Scrap Iron	₩ gross ton $10.00@10.25
Heavy Cast Scrap	₩ gross ton $10 50@11.00
Stove Plate Scrap	₩ gross ton 7.00@ 7.50
Burnt Iron	₩ gross ton $5.00@ 5.50